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CANADA—DEPARTMENT OF TRADE AND COMMERCE
DOMINION BUREAU OF STATISTICS
MINING, METALLURGICAL AND CHEMICAL STATISTICS

ANNUAL REPORT
ON THE
MINERAL PRODUCTION OF
CANADA
DURING THE CALENDAR YEAR

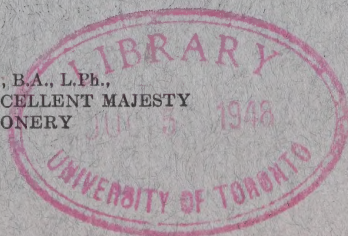
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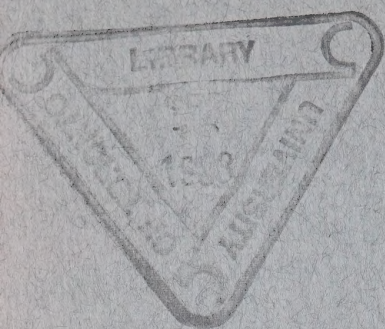
Published by Authority of the Rt. Hon. C. D. Howe, M.P.,
Minister of Trade and Commerce



OTTAWA
EDMOND CLOUTIER, C.M.G., B.A., L.Ph.,
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
CONTROLLER OF STATIONERY
1948

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PREFACE

Annual reports on the Mineral Production of Canada have been published since 1886. The first reports were prepared by the Geological Survey of Canada, later by the Mines Branch of the Department of Mines, and since 1921 by the Dominion Bureau of Statistics.

The present report contains final data on the production from Canada's metal and non-metal mines and quarries, oil and gas wells, and plants producing lime, products from Canadian clays, and cement. It contains tables showing the salaries and wages paid, the number of employees, the amounts spent on fuel and power, the power-producing equipment installed, and the process supplies purchased.

The report is divided into nine chapters; the first is a complete summary, and the remaining chapters conform to the eight major groups into which the Canadian mining industry is divided. A list of all mining companies which reported to the Bureau for 1945 is added.

The total value of the mineral production of Canada, as shown in this report, includes all metals and minerals with the exception of those obtained from pitchblende ores which are confidential.

In pre-war years, this report included world tables of the production of all important minerals by countries. No figures on world production have been published since 1939, but their publication will be resumed as soon as available.

As in previous years, the Bureau co-operated with the Mines Departments of the provinces of Nova Scotia, Quebec, Ontario, Manitoba, Saskatchewan and British Columbia in the collection of these statistics. Forms are filled out in duplicate by the reporting companies, thereby saving the operator extra work, and resulting in uniform totals for Dominion and Provincial statistical bureaux.

The thanks of the Bureau are tendered to the Dominion Department of Mines and Resources and to the mine and smelter operators for assistance given and information made available. Close co-operation has been maintained with the Office of the Metals Controller. Railway and other transportation companies, as well as smelter operators outside of Canada, have also furnished data, the receipt of which is gratefully acknowledged.

Under the direction of Mr. W. H. Losee, Director, Division of Census of Industry and Merchandising, and Mr. H. McLeod, Chief, Mining, Metallurgical and Chemical Statistics, this report has been prepared by Mr. A. R. Deir, Mining Statistician.

HERBERT MARSHALL,
Dominion Statistician.

DOMINION BUREAU OF STATISTICS,
Ottawa, Aug. 25, 1947

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DOMINION BUREAU OF STATISTICS

H. MARSHALL, Dominion Statistician

W. H. LOSEE, Director, Division of Census of Industry and Merchandising

H. McLEOD, Chief, Mining, Metallurgical and Chemical Statistics

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DURING THE CALENDAR YEAR 1945

Canadian mineral production in 1945 was valued at \$498,755,181 compared with a value of \$485,819,114 in 1944, an increase of 2.6 per cent but a decrease of 13.6 per cent from the all-time high of \$566,768,672 in 1942. The value of recoverable metal contained in Canadian ores increased to \$317,093,719 from a total value of \$308,292,161 in the preceding year. In the fuels, which include coal, natural gas, peat and petroleum, the production value decreased to \$93,531,276 from the former annual value of \$97,291,007. Asbestos, gypsum, salt, sulphur and other non-metallic minerals were valued at \$39,710,513, representing an increase from \$37,251,009 in 1944. Structural materials, which include brick, tile, cement, lime, stone, sand and gravel, increased to a value of \$48,419,673 from the previous year's production of \$42,984,937.

The insufficient number of skilled miners caused the production of gold and copper to continue to decline. The cessation of hostilities brought a change in the demand for nickel and copper, thus there was a curtailment of production. The abandonment of part of the mutual aid program reduced the exports of magnesium metal, the production of which ceased temporarily as there was enough metal stockpiled to meet the needs. The iron ore shipments showed a marked increase, largely due to ability of the Steep Rock Iron Mines Ltd., to remove large tonnages from their open-pit deposit. The value of the lead production increased to \$17,349,723 from \$13,706,199 in the previous year. The tonnage of zinc decreased but the value increased. A portion of Canada's zinc was exported in concentrated ore and received a higher price in the foreign market than was permitted in ceiling-priced domestic market.

With the exception of natural gas, there was a smaller production of fuels. Nearly all the non-metallic minerals increased in production and value. A noted exception was mica, of which the previous quantities of the larger sizes were not produced. In 1945 the Purdy Mica Mines Ltd. stopped mining muscovite in the Eau Claire area.

The construction industry made greater demands for cement, the sales of which nearly equalled those of 1942, the highest year since 1931. There was a corresponding increase for other structural materials.

There were fewer employees in the mineral industry in 1945 than in the preceding year; 96,250 employees received \$185,279,926 in wages and salaries compared with 104,878 employees and \$204,308,314 in 1944, and 112,140 employees and \$207,575,955 in 1943.

Table 1.—Quantities and Values of Mineral Products from Canadian Sources, 1944 and 1945

	1944		1945	
	Quantity	Value \$	Quantity	Value \$
METALLICS				
Antimony.....lb.	1,937,933	281,000	1,667,951	290,557
Arsenic (As ₂ O ₃).....lb.	2,627,022	180,866	2,045,730	130,909
Bismuth.....lb.	123,875	154,844	189,815	260,047
Cadmium.....lb.	526,970	579,667	646,064	639,603
Calcium.....lb.			22,720	19,312
Chromite.....ton	27,054	748,494	5,755	160,752
Cobalt.....lb.	36,283	34,106	109,123	90,026
Copper.....lb.	547,070,118	65,257,172	474,914,052	59,322,261
Gold.....fine oz.	2,922,911	112,532,073	2,686,727	103,823,990
Iron ore.....ton	553,252	1,909,608	1,135,444	3,635,095
Lead.....lb.	304,582,198	13,706,199	346,994,472	17,349,723
Magnesium.....lb.	10,579,778	2,575,695	7,358,545	1,607,264
Mercury.....lb.	735,908	1,210,375		
Molybdenite concentrates.....lb.	2,127,508	1,079,698	978,117	411,663
Nickel.....lb.	274,598,629	69,204,152	245,130,983	61,982,133
Palladium, rhodium, iridium, etc.....fine oz.	42,929	1,960,085	458,674	18,671,074
Platinum.....fine oz.	157,523	6,064,635	208,234	8,017,010
Pitchblende products.....(a)				
Selenium.....lb.	298,592	537,466	379,187	728,039
Silver.....fine oz.	13,627,109	5,859,656	12,942,906	6,083,166
Tellurium.....lb.	10,661	18,657	454	929
Thallium.....lb.	128	1,690		
Tin.....lb.	516,626	299,643	849,983	492,990
Titanium ore.....ton	33,973	165,195	14,147	67,575
Tungsten concentrates.....lb.	886,745	245,780	1,153	1,045
Zinc.....lb.	550,823,353	23,085,405	517,213,604	33,308,556
Total Metallics.....		308,292,161		317,093,719
NON-METALLICS—FUELS				
Coal.....ton	17,026,499	70,433,169	16,506,713	67,588,402
Natural gas.....M cu. ft.	45,067,158	11,422,541	48,411,535	12,309,564
Peat.....ton	644	5,397	118	1,062
Petroleum.....bbl.	10,099,404	15,429,900	8,482,796	13,632,248
Total Fuels.....		97,291,007		93,531,276
OTHER NON-METALLICS				
Asbestos.....ton	419,265	20,619,516	466,897	22,805,157
Barytes.....ton	118,719	1,023,696	139,589	1,211,403
Corundum.....ton	173	17,111	1,317	130,393
Diatomite.....ton	13	437	46	1,238
Feldspar.....ton	23,509	227,632	30,246	282,656
Fluorspar.....ton	6,924	217,701	7,369	233,708
Garnet schist.....ton	3	90		
Graphite.....ton	1,582	171,166	1,910	179,001
Grindstones.....ton	225	12,000	225	10,870
Gypsum.....ton	596,164	1,511,978	839,781	1,783,290
Iron oxides.....ton	8,599	150,250	10,314	172,053
Magnesitic dolomite and brucite.....ton		1,139,281		1,278,596
Mica.....lb.	6,684,846	841,026	7,044,221	233,270
Mineral waters.....gal.	156,150	79,031	244,761	126,499
Nepheline syenite.....ton	47,825	217,989	61,345	275,766
Peat moss.....ton	(b) 80,446	1,869,553	83,963	2,011,139
Phosphate.....ton	482	6,716	299	4,356
Quartz.....ton	1,740,262	1,658,409	1,513,628	1,535,458
Salt.....ton	695,217	4,074,021	673,076	4,054,720
Silica brick.....M	3,997	312,092	4,208	317,263
Soapstone (including some talc).....ton	19,013	204,127	14,225	153,694
Sodium carbonate.....ton	44	454	256	3,146
Sodium sulphate.....ton	102,421	978,842	93,068	884,322
Sulphur.....ton	248,088	1,755,739	250,114	1,881,321
Talc.....ton	13,584	153,122	12,868	141,194
Total.....		37,251,009		39,710,513
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS				
Clay products (brick, tile, etc).....		6,997,425		8,913,062
Cement.....bbl.	7,190,551	11,621,372	8,471,679	14,246,480
Lime.....ton	885,142	6,926,844	832,253	6,525,038
Sand and gravel.....ton	28,399,986	10,280,119	29,750,703	10,568,363
Stone.....ton	5,994,992	7,159,177	6,205,555	8,166,700
Total Clay Products and Other Structural Materials.....		42,984,937		48,419,673
Grand Total.....		485,819,114		498,755,181

(a) Not available for publication.

(b) Includes some duplication resulting from the resale of moss purchased from other producers.

Table 2.—Finally Revised Statistics on the Mineral Production of Canada, by Provinces, 1945

	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Northwest Territories	Yukon	Canada
METALS											
Antimony..... lb.								1,667,951 250,557			1,667,951 290,557
Arsenic..... lb.			1,821,233 118,557	224,467 12,352							2,045,790
Bismuth..... lb.								189,815			189,815
Cadmium..... lb.								260,047 510,432			260,047 646,064
Calcium..... lb.								505,328			639,603
Chromite..... ton				22,720 19,312	27,891 27,612	107,741 106,663					22,720 19,312
Coal..... lb.			5,755 100,752								5,755 100,752
Copper..... lb.				109,123 90,026							109,123 90,026
Gold..... oz.			102,085,069 12,886,976	239,450,875 29,771,633	41,126,155 5,161,332	65,900,701 8,270,538		25,751,252 3,231,782			474,314,052 59,322,261
Iron ore..... ton	3,291 126,704		661,608 25,471,908	1,625,368 62,576,668	70,655 2,720,218	108,568 4,179,868	7 269	186,854 7,193,879	8,655 333,218	31,721	103,523,990 1,135,444
Lead..... lb.				3,635,095 688,762							3,635,095 346,994,472
Magnesium..... lb.			9,229,726 461,486	33,438 7,358,545				336,976,468 16,848,823		119,516 5,976	346,994,472 7,358,545
Mercury..... lb.				1,607,264							1,607,264
Molybdenite (concentrates)..... lb.											
Nickel..... lb.			978,117 411,663								978,117 411,663
Palladium, rhodium, etc..... oz.			245,130,983 61,982,133					245,130,983 61,982,133			245,130,983 61,982,133
Platinum..... oz.			18,671,074 208,234					18,671,074 208,234			18,671,074 208,234
Pitchblende products..... lb.				8,017,010	Data not available for publication.						8,017,010
Selenium..... lb.			100,720 308,553	168,000 322,560	9,258 17,775	41,209 79,121					379,187 728,039
Silver..... oz.	112		2,149,570	3,185,369	533,883	1,426,457	1	5,020,323	2,033	25,158	12,942,906
Tellurium..... lb.	53		1,010,298	1,497,123	250,925	670,435		2,041,552	956	11,824	6,063,166
Thallium..... lb.					89 171	395 758					494 929
Tin..... lb.											
Titanium ore..... ton			14,147 67,575					849,983 492,990			849,983 492,990

Table 2.—Finally Revised Statistics on the Mineral Production of Canada, by Provinces, 1945—(Concluded)

	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskat- chewan	Alberta	British Columbia	Northwest Territories	Yukon	Canada
SUMMARY											
Metallics.....	126,757	2,381,787	48,104,774	188,251,716	10,423,066	18,164,035	269	50,449,870	334,174	1,239,038	317,083,719
Fuels.....	28,350,278	311,103	26,361,993	5,107,126	703,440	2,400,009	48,016,979	7,137,859	136,638		93,531,276
Other non-metallics.....	2,433,410	232,783	2,534,630	5,745,462	269,917	936,866	1,430,948	2,698,191			39,710,513
Clay products.....	433,455	1,256,427	14,516,723	3,107,189	2,943,000	563,276	1,401,875	661,955			8,913,092
Other structural materials.....	876,759			14,330,363			1,904,066	3,115,967			39,506,581
Grand Total—1945.....	32,220,659	4,182,100	91,518,120	216,541,856	14,429,423	22,336,074	51,753,237	64,063,842	470,812	1,239,038	498,755,181
Per cent of total.....	6.5	0.8	18.3	43.4	2.9	4.5	10.5	12.8	0.1	0.2	100.0
Grand Total—1944.....	33,981,977	4,133,992	90,182,533	210,706,307	13,830,406	22,291,848	51,066,662	57,246,071	1,440,069	939,319	485,819,114

Table 3.—Production of Leading Mineral Products, by Months, 1944 and 1945

1944	Asbestos	Cement	Clay Products	Coal	Copper
	tons	barrels	\$	tons	pounds
January.....	31,987	176,123	375,256	1,626,068	48,877,850
February.....	32,663	201,622	333,525	1,454,614	45,836,837
March.....	36,675	272,971	393,411	1,546,446	48,203,812
April.....	33,839	393,811	411,640	1,236,200	44,989,445
May.....	35,644	738,885	621,655	1,290,451	47,578,287
June.....	35,495	994,410	681,358	1,233,251	47,082,930
July.....	31,259	982,191	740,908	1,168,859	44,975,986
August.....	37,036	943,459	759,123	1,379,044	44,743,580
September.....	38,137	860,024	745,672	1,391,475	43,106,124
October.....	37,752	878,238	766,808	1,528,291	42,039,927
November.....	36,076	559,448	721,703	1,638,628	43,811,150
December.....	32,702	189,969	446,366	1,533,142	45,824,190
Total.....	419,265	7,190,851	6,997,425	17,026,499	547,070,118

1944	Feldspar	Gold	Gypsum	Lead	Lime
	tons	fine oz.	tons	pounds	tons
January.....	1,580	258,607	44,157	32,857,666	74,063
February.....	2,766	257,613	44,704	29,887,544	75,295
March.....	2,316	267,485	49,168	24,373,016	78,485
April.....	1,279	245,577	38,839	25,383,726	74,638
May.....	1,131	257,047	41,547	20,583,341	76,432
June.....	2,259	240,673	47,177	19,832,745	73,869
July.....	1,806	236,362	66,660	24,633,240	67,957
August.....	1,832	237,617	80,437	18,401,675	70,837
September.....	2,177	237,151	57,804	18,993,630	71,269
October.....	2,355	230,749	50,047	18,452,002	79,981
November.....	1,849	225,806	39,965	35,836,191	75,336
December.....	2,159	229,624	35,659	35,347,422	66,980
Total.....	23,509	2,922,911	596,164	304,582,198	885,142

1944	Natural Gas	Nickel	Petroleum	Salt (*)	Silver	Zinc
	M cu. ft.	pounds	barrels	tons	fine oz.	pounds
January.....	5,155,411	23,546,809	831,512	25,163	1,212,349	49,438,642
February.....	5,052,082	22,383,335	788,257	23,761	1,280,962	46,551,662
March.....	4,981,513	25,290,263	871,446	27,701	1,375,351	47,918,693
April.....	4,043,182	23,161,864	838,010	26,853	1,237,170	45,119,487
May.....	3,104,618	24,024,759	852,335	31,004	1,035,847	47,499,582
June.....	2,677,868	20,374,755	818,678	27,801	1,167,200	41,373,262
July.....	2,424,789	23,411,947	806,342	27,693	1,077,974	42,536,604
August.....	2,393,762	23,848,093	827,603	27,690	835,166	44,843,903
September.....	2,634,712	22,710,286	852,263	29,290	910,838	46,955,939
October.....	3,053,695	21,819,119	878,082	24,691	1,060,784	43,098,175
November.....	4,398,092	22,259,195	855,752	30,401	1,199,153	44,718,272
December.....	5,147,434	21,768,204	879,124	22,970	1,234,315	50,769,132
Total.....	45,067,158	274,598,629	10,099,404	325,018	13,627,109	550,823,353

(*) Commercial salt only.

1945	Asbestos	Cement	Clay Products	Coal	Copper
	tons	barrels	\$	tons	pounds
January.....	31,653	171,662	438,003	1,691,066	44,098,887
February.....	37,760	194,002	427,903	1,504,759	39,649,050
March.....	50,443	380,911	587,761	1,469,398	45,638,927
April.....	43,310	614,682	614,626	1,321,063	42,680,662
May.....	41,757	761,027	731,543	1,201,274	40,903,706
June.....	39,465	1,039,113	792,324	1,277,840	44,097,021
July.....	37,553	1,157,852	831,472	1,092,203	42,119,787
August.....	41,054	1,048,418	874,109	1,199,078	39,228,972
September.....	38,910	1,005,830	890,015	1,187,429	34,797,140
October.....	35,666	1,101,474	1,022,786	1,217,034	34,953,070
November.....	36,593	692,661	971,977	1,790,504	32,035,764
December.....	32,733	305,447	730,573	1,555,065	34,711,066
Total.....	466,897	8,471,679	8,913,092	16,506,713	474,914,052

Table 3.—Production of Leading Mineral Products, by Months, 1944 and 1945
(—(Concluded))

1945	Feldspar	Gold	Gypsum	Lead	Lime
	tons	fine oz.	tons	pounds	tons
January.....	1,205	237,210	12,936	25,426,948	62,713
February.....	1,921	215,993	12,901	24,389,248	60,420
March.....	2,321	232,610	16,508	34,899,827	70,031
April.....	2,011	227,575	24,776	27,955,975	70,759
May.....	2,161	221,288	43,759	25,359,183	70,218
June.....	3,628	215,802	103,749	24,982,494	69,828
July.....	2,198	213,815	82,479	25,309,517	68,305
August.....	3,090	215,386	99,012	27,911,967	66,407
September.....	2,654	215,157	132,380	28,951,516	65,982
October.....	2,342	253,487	150,756	32,572,398	72,597
November.....	3,645	224,542	110,025	34,875,826	86,524
December.....	3,070	243,862	50,500	34,361,573	68,369
Total.....	30,246	2,696,727	839,781	346,994,472	832,253

1945	Natural Gas	Nickel	Petroleum	Salt (*)	Silver	Zinc
	M cu. ft.	pounds	barrels	tons	fine oz.	pounds
January.....	5,282,719	23,667,393	872,930	23,607	1,032,679	49,348,491
February.....	4,644,185	20,635,189	770,975	22,812	964,449	44,378,782
March.....	4,185,445	23,412,858	771,674	23,282	1,214,945	47,545,212
April.....	3,987,482	21,567,624	685,903	25,936	1,067,862	43,247,386
May.....	3,619,680	23,382,373	708,633	28,944	1,213,710	45,282,856
June.....	3,154,361	22,546,414	666,103	29,565	1,113,656	43,330,713
July.....	3,050,933	23,790,534	689,698	27,631	963,561	45,053,498
August.....	3,059,726	21,896,415	678,123	28,829	1,069,038	41,388,606
September.....	3,378,445	16,434,819	650,612	28,631	975,250	38,336,609
October.....	3,963,196	17,170,277	675,918	29,239	1,049,562	38,736,083
November.....	4,841,314	15,416,996	652,081	31,379	1,110,380	40,480,003
December.....	5,244,079	15,210,091	660,146	24,733	1,167,814	40,085,365
Total.....	48,411,585	245,130,983	8,482,796	324,588	12,942,906	517,213,604

(*) Commercial salt only.

Table 4.—Annual Values of the Mineral Production of Canada since 1886

NOTE.—In presenting a total valuation of the mineral production as is here given, it should be explained that the production of the metals, copper, gold, lead, nickel, silver, zinc, etc., is given as far as possible on the basis of the quantities of metals recovered in smelters, and the total quantities in each case are valued chiefly at the average market price of the refined metal in a recognized market. There is thus included in some cases the values that have accrued in the smelting or refining of metals outside of Canada.

Year	Value of production	Value per capita	Year	Value of production	Value per capita
	\$	\$		\$	\$
1886.....	10,221,255	2-23	1917.....	189,646,321	23-18
1887.....	10,321,331	2-23	1918.....	211,301,897	25-37
1888.....	12,518,894	2-67	1919.....	176,686,390	20-84
1889.....	14,013,113	2-96	1920.....	227,859,665	26-40
1890.....	16,763,353	3-50	1921.....	171,923,342	19-56
1891.....	18,976,616	3-02	1922.....	184,297,242	20-55
1892.....	16,623,415	3-39	1923.....	214,079,331	23-41
1893.....	20,035,082	4-04	1924.....	209,583,406	22-71
1894.....	19,931,158	3-98	1925.....	226,583,333	24-19
1895.....	20,505,917	4-05	1926.....	240,437,123	25-61
1896.....	22,474,256	4-38	1927.....	247,356,695	25-67
1897.....	28,485,023	5-49	1928.....	274,989,487	27-96
1898.....	38,412,431	7-32	1929.....	310,850,246	31-00
1899.....	49,234,005	9-27	1930.....	279,873,578	27-42
1900.....	64,420,877	12-04	1931.....	230,434,726	22-21
1901.....	65,797,911	12-16	1932.....	191,228,225	18-20
1902.....	63,231,836	11-36	1933.....	221,495,253	20-74
1903.....	61,740,513	10-63	1934.....	278,161,590	25-67
1904.....	60,082,771	10-27	1935.....	312,344,457	28-56
1905.....	69,078,999	11-49	1936.....	361,919,372	32-82
1906.....	79,286,697	12-81	1937.....	457,359,092	41-13
1907.....	86,865,202	13-75	1938.....	441,823,237	39-42
1908.....	85,557,101	13-16	1939.....	474,602,059	41-94
1909.....	91,831,441	13-70	1940.....	529,825,035	46-39
1910.....	106,823,623	14-93	1941.....	560,241,290	49-06
1911.....	103,220,994	14-32	1942.....	566,763,672	48-63
1912.....	135,048,296	18-33	1943.....	530,053,966	44-87
1913.....	145,634,812	19-35	1944.....	485,819,114	40-57
1914.....	128,863,075	16-75	1945.....	498,755,181	*41-15
1915.....	137,109,171	17-44			
1916.....	177,201,534	22-05			
			Grand Total.....	11,266,610,527	

*Based on an estimated population of 12,119,000.

NOTE.—For complete data, by minerals, see Annual Mineral Production Report for 1942.

Table 5.—Annual Values of the Mineral Production of Canada, by Classes, since 1930

Year	Metallics	Non-metallics		Total
		Fuels and other non-metallics	Structural materials and clay products	
	\$	\$	\$	\$
1930.....	142,743,764	83,402,349	53,727,465	279,873,578
1931.....	120,930,147	65,346,284	44,158,295	230,434,726
1932.....	112,041,763	56,788,179	22,398,283	191,228,225
1933.....	147,015,593	57,782,973	16,696,687	221,495,253
1934.....	194,110,968	64,763,861	19,286,761	278,161,590
1935.....	221,800,849	67,328,208	23,215,400	312,344,457
1936.....	259,425,194	76,723,437	25,770,741	361,919,372
1937.....	334,165,243	88,324,150	34,869,699	457,359,092
1938.....	323,075,154	84,869,417	33,878,666	441,823,237
1939.....	343,506,123	95,733,177	35,362,759	474,602,059
1940.....	382,503,012	104,849,372	42,472,651	529,825,035
1941.....	395,346,581	119,521,437	45,373,272	560,241,290
1942.....	*392,192,452	128,846,413	45,729,807	566,768,672
1943.....	*356,812,760	131,230,952	42,010,254	530,053,966
1944.....	*308,292,161	134,542,016	42,984,937	485,819,114
1945.....	*317,093,719	133,241,789	48,419,673	498,755,181

*Exclusive of the values of pitchblende products.

NOTE.—For a history of Canadian Mining see the 1942 Annual Mineral Production Report for Canada.

Table 6.—Total (Cumulative) Recorded Production in Canada of Specified Metals and Minerals to December 31, 1945

		Quantity	Value
			\$
Gold.....	(a) fine ounces	94,994,481	2,788,211,971
Silver.....	(b) fine ounces	893,862,834	500,648,992
Copper.....	(c) pounds	10,197,295,095	1,196,503,210
Nickel.....	(d) pounds	4,427,153,875	1,198,774,017
Lead.....	(b) pounds	8,913,918,059	385,783,048
Zinc.....	(i) .....	.....	313,842,337
Cobalt.....	(e) pounds	34,526,509	33,816,943
Platinum metals.....	(g) fine ounces	4,024,625	.....
Coal.....	(h) tons	702,855,269	2,169,305,703
Asbestos.....	(i) tons	9,545,836	381,363,675

NOTE.—The total value of production by the entire Canadian mining industry from 1886 to the end of 1945 totalled \$11,266,610,527.

(a) Since 1858; (b) since 1887; (c) since 1886; (d) since 1889; (e) since 1904; (f) since 1898; (g) since 1920. Production data prior to 1920 were not included owing to some doubt existing as to origin of certain metals recovered in United States plants. (h) since 1785; (i) since 1880.

Table 7.—Values of the entire Mineral Production of Canada, by Provinces, since 1932

Year	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba
	\$	\$	\$	\$	\$
1932.....	16,201,279	2,223,505	25,638,466	85,910,030	9,058,365
1933.....	16,966,183	2,107,682	28,141,482	110,205,021	9,026,951
1934.....	23,310,729	2,156,151	31,269,945	145,565,871	9,776,934
1935.....	23,183,128	2,821,027	39,124,696	158,934,269	12,052,417
1936.....	26,672,278	2,587,791	49,736,919	184,532,892	11,315,527
1937.....	30,314,188	2,763,643	65,160,215	230,042,517	15,751,645
1938.....	26,253,645	3,802,565	68,965,594	219,801,994	17,173,002
1939.....	30,746,200	3,949,433	77,335,998	232,519,948	17,137,930
1940.....	33,318,587	3,435,916	86,313,491	261,483,349	17,828,522
1941.....	32,569,867	3,690,375	99,651,044	267,435,727	16,689,867
1942.....	32,783,165	3,690,158	104,300,010	259,114,946	14,345,046
1943.....	29,979,837	3,676,834	101,610,678	232,948,959	13,412,266
1944.....	33,981,977	4,133,902	90,182,553	210,706,307	13,830,406
1945.....	32,220,659	4,182,100	91,518,120	216,541,856	14,429,423

Year	Saskat- chewan	Alberta	British Columbia	Yukon	Northwest Territories (*)
	\$	\$	\$	\$	\$
1932.....	1,631,728	21,174,061	27,326,173	1,993,195	21,423
1933.....	2,477,425	19,702,953	30,794,504	2,041,223	279,729
1934.....	2,977,061	20,228,851	41,206,965	1,628,879	199,604
1935.....	3,816,943	22,289,681	48,692,050	1,302,308	541,638
1936.....	6,970,397	23,305,726	54,407,036	2,220,372	775,834
1937.....	10,271,463	25,597,117	73,555,798	3,784,528	994,518
1938.....	7,782,847	28,966,272	64,549,130	3,959,570	1,614,076
1939.....	8,794,090	30,691,617	65,216,745	4,961,321	3,248,777
1940.....	11,505,858	35,092,337	74,134,485	4,118,333	2,594,157
1941.....	15,020,555	41,364,885	76,841,180	3,117,992	3,860,298
1942.....	20,578,749	47,359,831	77,247,932	3,453,568	3,976,267
1943.....	26,735,984	48,941,210	68,442,386	1,625,819	2,679,993
1944.....	22,291,848	51,066,662	57,246,071	939,319	1,440,069
1945.....	22,336,074	51,753,237	64,063,842	470,812	1,239,058

* Values of pitchblende products not included since 1941.

Table 8.—Average Annual Metal Prices, in Canadian Dollars, 1930-1945

Year	Gold	Silver	Copper	Lead	Zinc
	Troy oz.	Troy oz.	Pound	Pound†	Pound†
	\$	\$	\$	\$	\$
1930.....	20.67	0.381	0.130*	0.039	0.036
1931.....	21.55	0.298	0.0837*	0.027	0.025
1932.....	23.47	0.317	0.0638	0.021	0.024
1933.....	28.60	0.378	0.0745	0.024	0.032
1934.....	34.50	0.475	0.0742	0.024	0.030
1935.....	35.19	0.648	0.0780	0.031	0.031
1936.....	35.03	0.451	0.0948	0.039	0.033
1937.....	34.99	0.449	0.131	0.051	0.0490
1938.....	35.17	0.435	0.0997	0.034	0.031
1939.....	36.14	0.405	0.101†	0.032	0.031
1940.....	38.50	0.382	0.101	0.034	0.034
1941.....	38.50	0.3826	0.101	0.034	0.034
1942.....	38.50	0.4216	0.101	0.034	0.034
1943.....	38.50	0.4525	0.1175	0.0375	0.040
1944.....	38.50	0.430	0.120	0.045	0.043
1945.....	38.50	0.470	0.1255	0.050	0.0644

*Based on New York; 1932-1942 based on London.

† Based on London; prices controlled by Government since 1939 and subject to revision since 1939.

YEARLY AVERAGE PRICES OF COPPER, LEAD, ZINC AND SILVER

Table 9.—(Copper, lead and zinc in U.S. cents per pound; silver, U.S. cents per ounce)
(American Bureau of Metal Statistics)

Year	Copper New York (b)	Lead New York	Zinc (a)	Silver New York	Year	Copper New York (b)	Lead New York	Zinc (a)	Silver New York
	Yearly average	Yearly average	Yearly average	Yearly average		Yearly average	Yearly average	Yearly average	Yearly average (c)
1889.....	13-750	3-930	5-023	93-600	1917.....	27-180	8-787	8-730	81-411
1890.....	15-750	4-480	5-550	104-600	1918.....	24-628	7-413	7-890	96-775
1891.....	12-625	4-350	5-020	98-800	1919.....	18-691	5-759	6-988	111-127
1892.....	11-550	4-090	4-630	87-600	1920.....	17-456	7-957	7-671	100-902
1893.....	10-750	3-730	4-080	78-200	1921.....	12-502	4-545	4-655	62-652
1894.....	9-560	3-290	3-520	63-000	1922.....	13-382	5-734	5-716	67-520
1895.....	10-760	3-230	3-630	65-280	1923.....	14-421	7-267	6-607	64-874
1896.....	10-880	2-980	3-940	67-060	1924.....	13-024	8-097	6-344	66-783
1897.....	11-290	3-580	4-120	59-790	1925.....	14-042	9-020	7-622	69-063
1898.....	12-030	3-780	4-570	58-260	1926.....	13-795	8-417	7-337	62-107
1899.....	16-670	4-470	5-750	59-580	1927.....	12-920	6-755	6-242	56-370
1900.....	16-190	4-370	4-390	61-330	1928.....	14-570	6-305	6-027	58-176
1901.....	16-110	4-330	4-070	58-950	1929.....	13-107	6-833	6-512	52-993
1902.....	11-626	4-069	4-840	53-160	1930.....	12-982	5-517	4-556	38-154
1903.....	13-235	4-237	5-191	53-570	1931.....	8-116	4-243	3-640	28-700
1904.....	12-823	4-309	4-931	57-221	1932.....	5-555	3-180	2-876	27-892
1905.....	15-590	4-707	5-730	60-352	1933.....	7-025	3-869	4-029	34-727
1906.....	19-278	5-657	6-048	66-791	1934.....	8-428	3-860	4-158	47-973
1907.....	20-004	5-325	5-812	65-327	1935.....	8-649	4-065	4-328	64-273
1908.....	13-208	4-200	4-578	52-864	1936.....	9-474	4-710	4-901	45-087
1909.....	12-982	4-273	5-352	51-502	1937.....	13-167	6-009	6-519	44-883
1910.....	12-738	4-446	5-370	53-486	1938.....	10-000	4-739	4-610	43-225
1911.....	12-376	4-420	5-608	53-304	1939.....	10-965	5-053	5-110	39-082
1912.....	16-341	4-471	6-799	60-835	1940.....	11-296	5-179	6-335	34-773
1913.....	15-269	4-370	5-504	59-791	1941.....	11-797	5-793	7-474	34-783
1914.....	13-602	3-862	5-061	54-811	1942.....	11-775	6-481	8-250	38-333
1915.....	17-275	4-673	13-054	49-684	1943.....	11-775	6-500	8-250	44-750
1916.....	27-202	6-858	12-634	65-661	1944.....	11-775	6-500	8-250	44-750
					1945.....	11-775	6-500	8-250	51-928

(a) To 1902, price of zinc at New York; for later years, price of zinc at East St. Louis.

(b) To 1898, price of Lake Copper. (c) 1932-1945—for other than newly mined domestic.

Table 10.—Mineral Production of Nova Scotia, 1943-1945

Product	1943		1944		1945	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS—						
Antimony.....	.....pound	.....	.....	.....	.....	.....
Copper.....	.....pound	.....	.....	.....	.....	.....
Gold.....	.....fine oz.	4,129	5,840	224,840	3,291	126,704
Lead.....	.....pound	.....	.....	.....	.....	.....
Silver.....	.....fine oz.	144	188	81	112	53
Tungsten concentrates.....	.....pound	19,374	18,564	.....	.....	.....
Zinc.....	.....pound	.....	.....	.....	.....	.....
Non-METALLICS—						
Barite.....	.....tons	22,550	263,419	106,106	970,774	108,434
Coal.....	.....tons	6,103,085	27,121,861	5,745,671	30,728,535	5,112,615
Diatomite.....	.....tons	82	2,465	5	175	24
Fluorspar.....	.....tons	825	17,000	.....	.....	.....
Grindstones.....	.....tons	.....	.....	.....	.....	10
Gypsum.....	.....tons	255,736	368,639	401,284	489,932	634,960
Quartz.....	.....tons	9,486	16,126	10,100	27,350	10,734
Salt.....	.....tons	47,775	245,157	38,809	281,482	37,825
Silica brick.....	.....M	3,113	169,783	2,931	177,003	3,040
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—						
Clay products.....	.....	478,571	.....	402,694	.....	433,455
Lime—						
Quicklime.....	.....tons	9,611	111,758	3,362	42,957	469
Hydrated lime.....	.....tons	122	1,586	.....	.....	.....
Sand and gravel.....	.....tons	917,376	585,007	911,970	411,041	1,308,848
Stone.....	.....tons	247,868	420,869	98,433	225,113	123,434
Total.....		29,979,837		33,981,977		32,220,659

DOMINION BUREAU OF STATISTICS

Table 11.—Mineral Production of New Brunswick, 1943-1945

Product	1943		1944		1945	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS—						
Iron ore.....tons	143,062	579,990				
Manganese ore.....tons	48	985				
Non-METALLICS—						
Coal.....tons	372,873	1,641,069	345,123	1,845,277	361,184	2,021,806
Grindstones.....tons	164	6,225	225	12,000	215	10,270
Gypsum.....tons	36,263	148,315	42,040	200,748	46,755	236,833
Natural gas.....M cu. ft.	675,029	327,787	702,464	341,636	653,230	317,568
Petroleum.....brls.	24,530	34,342	23,296	32,832	30,140	42,413
Peat Moss.....tone	990	27,000	2,000	64,000	2,000	64,000
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—						
Clay products.....		216,446		207,051		232,783
Lime—						
Quicklime.....tons	13,634	132,901	17,218	195,545	17,517	209,654
Hydrated lime.....tons	3,748	41,467	2,580	32,102	2,424	31,997
Sand and gravel.....tons	719,531	372,936	1,960,382	958,524	1,627,371	686,267
Stone.....tons	53,583	147,371	69,988	244,187	99,328	328,509
Total.....		3,676,834		4,133,902		4,182,100

Table 12.—Mineral Production of Quebec*, 1943-1945

Product	1943		1944		1945	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS—						
Arsenic (As ₂ O ₃).....lb.	2,744,921	221,085	2,268,067	153,944	1,821,263	118,557
Chromite.....tons	20,595	919,878	27,054	748,494	5,755	160,752
Copper.....lb.	131,163,776	15,411,744	108,055,172	12,966,620	102,685,069	12,880,976
Gold.....fine oz.	922,533	35,517,521	746,784	28,751,184	661,608	25,471,908
Iron ore.....tons						
Lead.....tons	2,435,523	91,430	10,487,842	471,933	9,229,726	461,486
Magnesium metal (a).....lb.						
Molybdenite concentrates.....lb.	784,715	549,515	2,124,693	1,078,616	978,117	411,663
Selenium.....lb.	216,498	378,872	146,352	263,434	160,720	308,583
Silver.....fine oz.	2,212,115	1,001,071	2,500,681	1,075,293	2,149,570	1,010,298
Tellurium.....lb.						
Titanium ore, sold for export.....tons	69,437	308,290	33,973	165,195	14,147	67,575
Tungsten concentrates.....lb.	5,401	5,369				
Zinc.....lb.	128,169,810	5,126,792	137,378,439	5,907,273	111,909,565	7,206,976
Non-METALLICS—						
Asbestos.....tons	467,196	23,169,505	419,265	20,619,516	466,894	22,802,511
Feldspar.....tons	17,199	176,222	17,842	177,271	26,389	247,242
Fluorspar.....tons			18	670		
Iron oxides (ochre).....tons	7,998	131,057	8,117	142,050	9,917	170,068
Magnetitic dolomite and brucite.....		1,260,056		1,139,281		1,278,596
Mica.....tons	1,543	245,846	1,137	178,899	1,428	121,011
Natural mineral waters.....Imp. gal.	125,605	61,793	148,965	78,226	236,476	125,523
Peat fuel.....tons	522	4,440	444	3,597		
Peat moss.....tons	14,398	298,307	19,033	359,724	18,517	387,499
Phosphate.....tons	1,050	14,272	482	6,716	291	4,236
Quartz.....tons	214,959	605,916	236,091	639,429	195,857	626,079
Soapstone.....tons	14,204	135,469	19,013	204,127	14,225	153,694
Sulphur.....tons	136,007	545,229	116,887	453,501	105,613	445,534
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—						
Cement.....brls.	3,394,895	4,899,578	3,249,302	4,736,004	3,872,373	5,985,077
Clay products.....		1,504,428		1,881,791		2,534,630
Lime—						
Quicklime.....tons	285,794	2,331,293	250,616	2,167,913	244,490	1,911,566
Hydrated lime.....tons	96,638	336,098	88,466	336,165	66,567	284,271
Sand and gravel.....tons	10,601,376	2,362,635	8,541,400	2,140,856	8,971,960	2,279,537
Stone.....tons	3,427,325	3,996,967	2,593,842	3,334,811	2,670,161	4,056,272
Total.....		101,610,678		90,182,533		91,518,120

(a) Produced in Ontario from Quebec brucite.

* There is also in this province an important production of aluminum from imported ores.

† Includes some talc.

Table 13.—Mineral Production of Ontario, 1943-1945

Product	1943		1944		1945	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS—						
Arsenic (As ₂ O ₃).....lb.	408,617	32,924	358,955	26,922	224,467	12,352
Bismuth.....lb.					22,720	19,312
Calcium.....lb.					109,123	90,026
Cobalt (a).....lb.	175,961	191,407	36,283	34,106		
Copper.....lb.	277,840,560	32,232,027	285,307,278	33,845,632	239,450,875	29,771,633
Gold.....fine oz.	2,117,215	81,612,777	1,731,836	66,675,686	1,625,368	62,576,668
Iron ore.....short tons	498,232	1,452,250	553,252	1,909,608	1,135,444	3,635,095
Lead.....lb.	2,273,896	85,362	1,065,741	47,958	668,762	33,438
Magnesium metal.....lb.	7,153,974	2,074,652	10,579,878	2,575,695	7,358,545	1,607,264
Molybdenite (concentrates).....lb.			2,815	1,082		
Nickel.....lb.	288,018,615	71,675,322	274,598,629	69,204,152	245,130,983	61,982,133
Palladium, rhodium, etc.....fine oz.	126,004	5,233,068	42,929	1,960,085	458,674	18,671,074
Platinum.....fine oz.	219,706	8,458,681	157,523	6,064,635	208,234	8,017,010
Selenium.....lb.	82,000	143,500	65,000	117,000	168,000	322,560
Silver.....fine oz.	2,671,320	1,208,879	3,143,275	1,351,608	3,185,369	1,497,123
Tellurium.....lb.	8,600	15,050	9,900	17,325		
Tungsten concentrates.....lb.	494,405	356,478	63,152	5,212	787	714
Zinc.....lb.	3,299,812	131,993	2,429,176	104,455	237,799	15,314
NON-METALLICS—						
Asbestos.....tons					3	2,646
Barite.....tons						
Corundum.....tons			173	17,111	1,317	130,393
Feldspar.....tons	6,659	61,549	5,667	50,361	3,857	35,414
Fluorspar.....tons	10,385	301,424	6,906	217,031	7,369	233,708
Garnet (schist).....tons			3	90		
Graphite.....tons	1,903	197,431	1,582	171,166	1,910	179,001
Gypsum.....tons	92,448	335,637	90,288	348,873	92,174	385,516
Mica.....tons	2,127	296,189	1,743	646,745	1,452	95,123
Natural mineral waters.....Imp. gal.	14,006	5,748	7,185	805	8,285	976
Natural gas.....M cu. ft.	7,914,408	6,543,913	7,082,508	4,694,097	7,199,970	4,837,586
Nepheline syenite.....tons		292,010	47,625	217,989	61,345	275,766
Peat (fuel).....tons	260	2,560	200	1,800	118	1,062
Peat (moss).....tons	11,120	136,595	12,490	144,820	11,667	224,100
Petroleum.....brls.	132,492	311,356	125,067	296,420	113,325	268,478
Phosphate.....tons	401	4,113			8	120
Quartz (b).....tons	1,350,640	852,196	1,326,288	868,389	1,165,238	820,664
Salt.....tons	594,889	3,356,870	603,806	2,906,117	578,697	2,920,973
Silica brick.....M	1,052	125,722	1,066	135,089	1,168	131,398
Sulphur.....tons	16,907	169,070	17,876	178,760	16,847	168,470
Talc.....tons	11,959	131,216	13,584	153,122	12,863	141,194
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—						
Cement.....brls.	1,972,009	2,872,732	1,863,210	2,730,381	2,460,996	3,805,131
Clay Products.....		2,453,829		2,347,396		3,107,189
Lime—						
Quicklime.....tons	382,950	2,794,071	391,678	2,886,778	360,597	2,682,658
Hydrated lime.....tons	28,971	321,123	37,607	424,399	38,050	449,018
Sand and gravel.....tons	8,285,309	3,620,852	9,529,803	4,417,427	10,466,891	4,466,862
Stone.....tons	3,206,027	2,958,383	2,958,283	2,909,980	2,952,357	2,926,694
Total.....		232,948,959		210,706,307		216,541,858

† Sulphur content of pyrites shipped and estimated sulphur salvaged from smelter gases.

(a) Exclusive of metal in ore placed on Government stock pile at Deloro, Ontario, but includes any metal reshipped from stock pile.

(b) Includes low grade silica sand for fluxing purposes.

Table 14.—Mineral Production of Manitoba, 1943-1945

Product	1943		1944		1945	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS—						
Cadmium.....lb.	20,983	24,130	20,921	23,013	27,891	27,612
Copper.....lb.	38,014,872	4,466,747	43,878,639	5,265,437	41,126,155	5,161,332
Gold.....fine oz.	91,775	3,533,337	74,168	2,855,468	70,655	2,720,218
Selenium.....lb.	5,239	9,168	12,957	23,323	9,258	17,775
Silver.....fine oz.	587,279	265,767	569,873	245,045	533,883	250,925
Tellurium.....lb.	†	†	113	198	89	171
Thallium.....lb.			128	1,690		
Tungsten concentrates.....lb.	16	16				
Zinc.....lb.	46,783,873	1,871,355	45,822,278	1,970,358	34,860,754	2,245,033
Non-METALLICS—						
Coal.....tons	999	2,964				
Feldspar.....tons						
Gypsum.....tons	37,989	380,529	38,330	368,498	42,275	300,636
Lithium minerals.....\$						
Natural gas.....cu. ft.	(b)	(b)	(b)	(b)	(b)	(b)
Peat moss.....tons	2,042	72,687	1,128	41,878	1,181	43,243
Salt.....tons	27,523	497,227	27,267	488,776	27,133	449,561
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—						
Cement.....brls.	793,913	1,503,416	865,756	1,698,567	959,398	2,027,629
Clay products.....		132,382		197,383		269,917
Lime—						
Quicklime.....tons	24,962	216,414	20,428	178,876	23,080	200,808
Hydrated lime.....tons	5,076	91,405	9,466	122,256	8,415	112,385
Sand and gravel.....tons	1,048,673	293,938	1,102,448	296,086	1,497,062	516,380
Stone.....tons	37,974	50,784	31,929	53,554	62,626	85,798
Total.....		13,412,266		13,830,406		14,429,423

† No commercial recovery reported by smelter; sometimes recovered by copper refiner but not paid for.

(b) No official reports received; estimated in previous years.

Table 15.—Mineral Production of Saskatchewan, 1943-1945

Product	1943		1944		1945	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS—						
Cadmium.....lb.	166,955	191,998	119,639	131,603	107,741	106,663
Copper.....lb.	85,948,719	10,098,974	73,514,499	8,821,740	65,900,701	8,270,538
Gold.....fine oz.	174,090	6,702,465	122,782	4,727,107	108,568	4,179,868
Selenium.....lb.	70,276	122,983	74,283	133,709	41,209	79,121
Silver.....fine oz.	2,812,624	1,272,825	1,735,773	746,382	1,426,457	670,435
Tellurium.....lb.	†	†	648	1,134	395	758
Zinc.....lb.	96,350,404	3,854,016	87,130,087	3,746,594	75,413,851	4,856,652
Non-METALLICS—						
Coal.....tons	1,665,972	2,432,249	1,372,766	2,034,914	1,532,995	2,327,082
Quartz (a).....tons	163,102	57,086	143,101	50,085	141,799	52,544
Salt.....tons						
Sodium sulphate.....tons	107,121	1,025,151	102,421	987,842	93,068	884,322
Natural gas.....M cu. ft.	116,201	45,568	119,116	46,656	163,824	58,165
Petroleum crude.....brls.					14,374	15,362
Volcanic dust.....tons	50	257				
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—						
Clay products.....		348,725		330,907		271,288
Sand and gravel.....tons	1,288,263	553,687	1,163,097	533,175	1,237,595	563,276
Total.....		26,735,984		22,291,848		22,336,074

(a) Low grade silica sand for fluxing purposes.

† No commercial recovery reported. See footnote preceding table.

Table 16.—Mineral Production of Alberta, 1943-1945

Product	1943		1944		1945	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS—						
Gold.....fine oz.	21	808	51	1,963	7	269
Silver.....fine oz.	1		4	2	1	
NON-METALLICS—						
Bituminous sands.....tons	(a)	(a)	(a)	(a)	(a)	(a)
Coal.....tons	7,676,726	24,030,686	7,428,708	26,814,937	7,800,151	27,751,377
Natural gas.....M cu. ft.	35,569,078	6,241,815	37,161,570	6,339,817	40,393,061	7,095,910
Peat moss.....tons	55	1,425				
Petroleum.....brls.	9,601,530	15,724,518	8,727,366	14,468,061	7,979,786	13,169,692
Salt.....tons	17,499	280,124	25,335	397,646	29,421	430,048
Sodium sulphate.....tons						
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—						
Cement.....brls.	606,703	1,176,442	699,989	1,370,502	620,337	1,246,346
Clay products.....		978,649		1,143,577		1,401,875
Lime—						
Quicklime.....tons	17,482	142,125	18,102	151,457	19,240	163,172
Hydrated lime.....tons	733	7,330	750	7,500	615	6,150
Sand and gravel.....tons	626,157	309,389	833,524	328,151	919,736	433,436
Stone.....tons	13,961	47,899	12,726	43,049	13,528	44,962
Total.....		48,941,210		51,066,667		51,753,237

(a) Included with petroleum refining; no crude sands sold.

Table 17.—Mineral Production of British Columbia, 1943-1945

Product	1943		1944		1945	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS—						
Antimony.....lb.	1,114,166	189,408	1,937,933	281,000	1,667,951	290,557
Arsenic (As ₂ O ₃).....lb.	(a)	(a)	(a)	(a)	(a)	(a)
Bismuth.....lb.	407,597	562,484	123,875	154,844	189,815	260,047
Cadmium.....lb.	598,673	688,474	386,410	425,051	510,432	505,328
Copper.....lb.	42,222,205	4,961,109	36,302,628	4,556,315	25,751,252	3,251,782
Gold.....fine oz.	241,346	9,291,821	196,857	7,578,994	186,854	7,193,879
Indium.....fine oz.						
Lead.....lb.	439,155,635	16,485,902	292,922,888	13,181,530	336,976,468	16,848,823
Magnesium.....lb.						
Mercury.....lb.	1,690,240	4,559,200	735,908	1,210,375		
Molybdenite.....lb.						
Platinum.....fine oz.	7	270				
Silver.....fine oz.	8,995,488	4,070,818	5,631,572	2,421,576	5,620,323	2,641,552
Tin.....lb.	778,937	450,623	516,626	299,643	849,983	492,990
Tungsten concentrates.....lb.	978,622	692,260	818,000	236,788	366	331
Zinc.....lb.	336,150,455	13,446,018	278,063,373	11,956,725	294,791,635	18,984,581
NON-METALLICS—						
Barite.....tons	1,924	15,834	12,613	52,922	31,155	45,780
Coal.....tons	2,039,402	7,648,720	2,134,231	9,009,506	1,699,768	7,137,859
Diatomite.....tons	16	866	8	262	22	498
Fluorspar.....tons						
Gypsum.....tons	24,412	148,348	24,222	103,927	23,617	70,032
Iron oxides (ochre).....tons	403	4,836	482	8,200	397	1,985
Magnesium sulphate.....tons						
Mica (schist).....tons	355	11,821	462	15,382	642	17,136
Peat moss.....tons	35,755	925,408	45,794	1,259,131	50,597	1,292,297
Quartz.....tons	38,562	77,124	24,682	73,156		
Sodium carbonate.....tons	468	5,148	44	484	286	3,146
Sulphur*.....tons	104,601	1,039,126	113,325	1,123,478	127,654	1,267,317
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—						
Cement.....brls.	534,769	1,146,865	512,594	1,085,918	558,575	1,182,297
Clay Products.....		495,163		486,626		661,955
Lime—						
Quicklime.....tons	31,714	261,526	36,798	324,553	42,780	406,239
Hydrated lime.....tons	6,333	43,895	8,071	56,343	8,009	61,349
Sand and gravel.....tons	2,257,784	877,413	4,357,362	1,194,859	3,721,240	1,066,796
Stone.....tons	236,212	341,906	199,791	348,483	284,121	399,286
Total.....		68,442,386		57,246,071		61,063,842

* Includes sulphur content of pyrites shipped and estimated sulphur contained in sulphuric acid and other products made from waste smelter gases.

(a) Considerable arsenic is contained in auriferous quartz ores exported. However, this is not paid for and data relating to its possible recovery are unobtainable.

Table 18.—Mineral Production of Yukon and the North West Territories, 1943-1945

Product	1943		1944		1945	
	Quantity	Value	Quantity	Value	Quantity	Value
YUKON		\$		\$		\$
METALLICS—						
Antimony.....lb.						
Gold.....fine oz.	41,160	1,584,660	23,818	916,993	31,721	1,221,258
Lead.....lb.	195,715	7,347	105,727	4,758	119,516	5,976
Silver.....fine oz.	52,348	23,690	32,066	13,788	25,158	11,824
Tungsten concentrates.....lb.	12,083	10,122	5,593	3,780		
NON-METALLIC—						
Coal.....tons						
Total		1,625,819		939,319		1,239,058
NORTH WEST TERRITORIES						
Copper.....lb.			11,902	1,428		
Gold.....fine oz.	59,032	2,272,732	20,775	799,838	8,655	333,218
Pitchblende products.....	(a)	(a)	(a)	(a)	(a)	(a)
Natural gas.....M cu. ft.	1,500	335	1,500	335	1,500	335
Silver.....fine oz.	13,250	5,996	13,677	5,881	2,033	956
Petroleum, crude.....brls.	293,750	400,201	1,223,675	632,587	345,171	136,303
Tungsten concentrates.....lb.	720	729				
Total		2,679,993		1,440,069		470,812

(a) Data not available for publication, recovered in refinery located at Port Hope, Ontario.

NOTE.—For complete data relating to Canadian Mineral Production, by Provinces, see Annual Mineral Production Report for 1942.

Table 19.—Tonnage of Ore Mined and Rock Quarried in the Canadian Mining Industry, 1943, 1944 and 1945

	1943	1944	1945
Gold quartz ores.....	12,853,610	10,790,495	9,780,555
Copper-gold-silver ores.....	8,251,579	7,395,608	5,914,580
Nickel-copper ores.....	12,925,590	12,954,201	10,854,735
Silver-cobalt ores.....	39,184	27,184	30,519
Silver-lead-zinc ores.....fine oz.	3,252,657	2,911,824	3,086,683
Miscellaneous metals (iron ore etc.).....	1,359,008	1,250,800	1,605,514
Asbestos.....	7,929,471	7,778,805	8,765,370
Feldspar and nepheline syenite.....	90,416	84,089	91,535
Quartz, exclusive of sand (shipments).....	947,195	988,758	807,002
Gypsum and anhydrite.....	430,822	536,356	830,723
Talc and soapstone.....	22,128	30,553	26,599
Iron oxides.....	12,648	15,519	8,189
Other non-metals.....	529,326†	536,957†	614,286
Stone, all kinds, quarries (exclusive of stone used for cement and lime).....	7,222,950	5,994,992	6,205,555
Stone used for the manufacture of cement.....	1,994,202	1,939,900	1,919,858
Estimate rock for the manufacture of lime.....	1,614,481	1,571,451	1,482,077
Total (other than coal).....	59,475,267	54,807,492	52,023,786
Total coal.....	17,859,057	17,026,499	16,506,713

For years 1922 to 1942, see Annual Mineral Production Report, year 1942.

† Exclusive of Peat and Peat Moss.

Table 20.—Principal Statistics of the Mineral Industry in Canada, by Industries, 1941-1945

1	2	3	4	5	6	7	8
Year	Number of active firms	Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	Capital employed (excluding ore reserves or other unmined material) (a)	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel also freight and smelter charges (c)	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries
			\$		\$	\$	\$
Metal Mining Industries							
ALLUVIAL GOLD MINES							
1941.....	108	110	10,755,706	797	1,954,278	332,361	3,800,142
1942.....	80	80	10,071,917	471	1,283,274	206,635	4,114,995
1943.....	43	43	11,372,849	237	646,283	157,758	1,892,214
1944.....	47	47	.....	211	598,556	84,104	1,197,021
1945.....	38	38	.....	234	692,683	80,748	1,546,005
AURIFEROUS QUARTZ MINES							
1941.....	338	357	243,138,864	32,551	62,150,810	33,124,349	145,978,833
1942.....	223	227	245,240,997	26,030	54,388,872	28,625,881	131,938,902
1943.....	151	156	212,675,979	19,038	40,665,283	21,236,137	95,597,710
1944.....	257	262	.....	17,226	37,023,505	19,029,032	75,234,384
1945.....	712	716	.....	18,388	37,690,177	18,242,253	67,577,062
COPPER-GOLD-SILVER MINES							
1941.....	21	22	81,521,902	5,866	10,695,023	34,608,742	30,220,331
1942.....	26	23	84,776,243	5,646	11,097,412	35,459,148	33,688,642
1943.....	20	22	94,750,186	5,743	11,806,827	29,695,643	43,840,679
1944.....	23	26	.....	5,175	10,710,071	24,191,776	38,198,039
1945.....	38	41	.....	4,658	9,663,612	21,134,603	38,165,269
SILVER-COBALT MINES							
1941.....	24	14	439,877	182	229,984	126,372	662,443
1942.....	13	14	358,691	192	283,980	150,043	600,207
1943.....	20	21	587,039	221	290,654	142,312	578,861
1944.....	10	11	.....	165	260,575	99,600	323,260
1945.....	7	8	.....	166	247,203	69,967	82,508
SILVER-LEAD-ZINC-MINES*							
1941.....	63	64	17,717,334	1,666	3,452,199	3,624,765	20,653,212
1942.....	44	44	19,484,442	2,185	4,730,370	4,268,352	23,504,642
1943.....	31	32	20,603,191	3,097	6,423,724	5,140,238	21,932,644
1944.....	20	20	.....	2,769	5,810,290	4,489,198	16,802,759
1945.....	20	20	.....	2,485	5,473,582	4,234,261	22,867,203
NICKEL-COPPER MINES							
1941.....	3	6	41,730,329	6,490	13,680,994	7,214,448	41,525,277
1942.....	4	8	48,303,790	7,147	15,365,207	8,186,777	50,801,633
1943.....	6	10	52,250,437	7,270	15,863,646	8,896,063	54,324,097
1944.....	5	9	.....	7,628	14,678,695	9,048,726	54,621,089
1945.....	4	8	.....	5,997	13,008,156	7,790,226	45,605,169
MISCELLANEOUS METAL MINES							
1941.....	46	47	2,931,695	725	1,141,244	1,355,563	2,073,323
1942.....	68	67	3,956,427	1,352	2,396,731	1,519,686	3,996,555
1943.....	54	59	15,603,307	1,964	4,295,153	2,540,873	6,521,495
1944.....	27	27	.....	1,385	2,809,013	2,057,850	3,303,143
1945.....	24	23	.....	985	2,041,349	2,519,571	1,756,559
NON-FERROUS METAL SMELTING AND REFINING							
1941.....	9	13	309,963,342	16,014	27,482,689	(b)259,585,976	†119,736,294
1942.....	10	15	356,052,965	21,162	37,340,556	(b)321,736,152	†125,881,047
1943.....	9	16	392,217,159	26,749	48,491,732	(b)399,356,356	†111,857,020
1944.....	9	16	.....	23,927	44,536,991	(b)350,903,763	†123,303,038
1945.....	9	17	.....	16,771	33,853,120	(b)265,777,648	89,898,878
Total Metal Mining Industries							
1941.....	612	633	708,199,049	64,291	120,787,221	339,972,576	364,649,855
1942.....	468	433	768,245,462	64,185	126,896,402	400,152,674	374,526,623
1943.....	(d)334	359	800,060,147	64,324	128,433,302	467,165,380	336,544,720
1944.....	(e)398	418	.....	58,486	116,427,696	409,904,049	312,982,733
1945.....	(f)852	871	.....	49,684	102,669,882	319,549,277	267,498,653

*Contains data relating to silver-pitchblende ores in the Northwest Territories. †Value added by smelting.

(a) Not reported in 1944 and 1945.

(b) Includes fuel and electricity used for metallurgical purposes and cost of ores, etc., treated which were \$213,542,005 in 1941, \$258,903,818 in 1942, \$317,917,186 in 1943, \$281,266,002 in 1944 and 219,204,858 in 1945.

(c) See end of table.

(d) 285 producing. (e) 213 producing. (f) 183 producing.

DOMINION BUREAU OF STATISTICS

Table 20.—Principal Statistics of the Mineral Industry in Canada, by Industries, 1941-1945—Continued

1 Year	2 Number of active firms	3 Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	4 Capital employed (excluding ore reserves or other unmined material) (a) \$	5 Number of employees	6 Salaries and wages \$	7 Cost of process supplies, purchased electricity and fuel also freight and smelter charges (c) \$	8 Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries \$
Total Non-Metal Mining Industries, including Fuels							
*FUELS							
COAL							
1941.....	417	469	106,498,356	26,330	38,149,602	9,680,614	45,780,856
1942.....	380	419	108,766,697	26,205	42,091,137	10,965,528	49,473,229
1943.....	356	413	111,867,036	26,473	47,291,919	11,551,496	48,329,450
1944.....	341	394	.....	25,596	55,020,537	12,712,820	54,344,700
1945.....	324	373	.....	25,301	49,431,965	11,604,450	52,642,796
NATURAL GAS							
1941.....	231	3,424	81,280,541	2,161	2,841,795	108,204	11,114,699
1942.....	212	3,566	82,768,602	1,940	2,826,811	104,802	11,251,548
1943.....	191	3,558	83,963,163	1,882	2,846,514	189,740	11,362,956
1944.....	211	3,621	.....	1,810	2,855,654	201,152	9,571,205
1945.....	218	3,748	.....	1,890	2,993,091	245,812	10,614,782
PETROLEUM							
1941.....	272	2,312	58,206,984	1,844	3,254,817	803,798	14,207,526
1942.....	242	2,253	54,707,282	1,972	3,648,965	1,207,463	15,668,660
1943.....	233	2,197	59,058,622	2,399	5,212,895	912,358	15,994,422
1944.....	224	2,264	.....	2,547	5,814,676	1,242,795	14,575,563
1945.....	229	2,222	.....	1,968	3,898,662	866,059	13,255,862
TOTAL FUELS							
1941.....	920	6,205	245,985,881	50,535	44,246,214	10,592,616	71,103,281
1942.....	854	6,238	246,245,681	50,117	48,666,913	12,277,793	76,393,437
1943.....	780	6,168	254,888,821	50,764	55,351,328	12,653,594	76,686,828
1944.....	776	6,279	.....	29,953	63,720,867	14,166,767	78,491,468
1945.....	771	6,343	.....	29,159	56,353,718	12,716,321	76,618,440
OTHER NON-METAL MINING INDUSTRIES							
ASBESTOS							
1941.....	9	10	21,325,558	3,760	4,996,101	4,246,246	17,229,399
1942.....	8	10	18,741,364	3,749	5,299,454	4,393,973	18,277,235
1943.....	9	10	20,831,427	3,844	5,576,734	4,509,876	19,899,540
1944.....	9	10	.....	4,050	6,401,185	4,016,059	17,820,317
1945.....	11	12	.....	4,237	6,679,885	4,235,725	19,557,074
FELDSPAR, QUARTZ AND NEPHELINE SYENITE							
1941.....	38	38	2,314,582	506	610,489	250,983	1,587,071
1942.....	36	38	2,563,248	533	782,903	412,028	1,586,968
1943.....	35	37	2,895,131	365	768,199	456,852	1,681,377
1944.....	41	42	.....	529	772,385	467,937	1,636,093
1945.....	31	31	.....	483	767,517	467,290	1,626,590

*Production of peat since 1929 included with the other non-metallics.

(c) See footnote at end of table. (a) not reported in 1944 and 1945.

Table 20.—Principal Statistics of the Mineral Industry in Canada, by Industries, 1941-1945—Continued

1	2	3	4	5	6	7	8
Year	Number of active firms	Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	Capital employed (excluding ore reserves or other unmined material) (a)	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel also freight and smelter charges (c)	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries
			\$		\$	\$	\$
OTHER NON-METAL MINING INDUSTRIES—Continued							
GYPSUM							
1941.....	8	15	5 175,821	648	745,008	452,008	1,766,420
1942.....	7	13	4,386,531	510	657,620	244,139	1,010,043
1943.....	6	12	5,147,424	438	617,780	248,043	1,133,425
1944.....	8	14	.....	328	490,872	387,941	1,124,037
1945.....	7	13	.....	434	647,287	575,645	1,207,645
IRON OXIDES (OCHRE)							
1911.....	4	4	189,877	44	42,152	21,394	121,675
1942.....	5	5	194,541	47	44,288	26,615	125,088
1943.....	5	5	254,891	47	46,554	27,028	108,865
1944.....	6	6	.....	55	49,876	37,485	112,765
1945.....	5	5	.....	51	58,011	35,401	136,652
MICA							
1941.....	81	81	1,180,097	246	181,800	39,529	295,759
1942.....	106	106	1,460,769	361	258,605	37,313	346,254
1943.....	78	78	458,402	430	357,992	54,395	499,461
1944.....	70	70	.....	400	359,797	56,624	784,402
1945.....	40	40	.....	174	190,138	50,492	182,778
PEAT (d)							
1941.....	22	22	825,154	667	486,116	17,472	628,936
1942.....	35	35	3,212,921	1,316	1,380,142	277,186	1,031,211
1943.....	44	44	2,477,287	1,012	1,000,348	307,674	1,284,770
1944.....	39	39	.....	1,183	1,154,009	383,376	1,780,000
1945.....	37	37	.....	1,233	1,304,249	516,104	1,874,202
SALT							
1941.....	9	9	5,559,307	668	1,018,652	1,175,966	2,676,533
1942.....	9	9	5,687,511	675	1,114,574	1,419,248	3,173,755
1943.....	9	9	5,490,594	682	1,223,009	1,539,774	3,648,854
1944.....	8	8	.....	710	1,302,143	1,498,424	3,287,660
1945.....	9	9	.....	724	1,329,384	1,623,241	3,241,456
TALC AND SOAPSTONE							
1941.....	8	8	695,581	148	128,820	55,206	305,603
1942.....	10	10	567,665	115	113,601	59,113	251,711
1943.....	8	8	576,691	90	101,719	58,031	208,654
1944.....	6	6	.....	113	133,883	68,165	289,084
1945.....	5	5	.....	103	134,782	79,582	215,306
MISCELLANEOUS NON-METAL MINES							
1941.....	61	63	2,648,830	683	878,700	797,564	1,645,184
1942.....	61	64	4,919,871	811	1,142,072	952,860	2,053,307
1943.....	52	54	3,522,842	911	1,363,526	1,208,470	2,268,237
1944.....	50	52	.....	865	1,500,250	1,188,860	2,797,719
1945.....	50	51	.....	879	1,601,068	1,378,366	3,037,352

(a) Not reported in 1944 and 1945.

(c) See footnote at end of this table.

(d) Includes data on peat fuel, peat moss and peat humus.

DOMINION BUREAU OF STATISTICS

Table 20.—Principal Statistics of the Mineral Industry in Canada, by Industries, 1941-1945—Continued

1	2	3	4	5	6	7	8
Year	Number of active firms	Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	Capital employed (excluding ore reserves or other unmined material) (a)	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel also freight and smelter charges (c)	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries
			\$		\$	\$	\$
TOTAL OTHER NON-METAL MINING INDUSTRIES							
1941.....	240	250	39,914,807	7,370	9,087,838	7,056,368	26,285,580
1942.....	277	290	41,734,421	8,117	10,793,259	7,822,376	27,855,522
1943.....	246	257	41,654,689	7,989	11,055,861	8,410,143	30,833,183
1944.....	237	248	.....	8,233	12,164,400	8,104,871	29,632,077
1945.....	195	203	.....	8,318	12,712,321	8,961,846	31,379,055
Total Non-Metal Mining Industries, Including Fuels							
1941.....	1,160	6,455	285,900,688	37,705	53,334,052	17,648,984	97,338,861
1942.....	1,111	6,528	287,977,002	38,234	59,360,172	20,100,168	104,248,959
1943.....	1,026	6,425	296,543,510	38,743	66,407,189	21,063,737	106,520,011
1944.....	1,013	6,527	.....	38,186	75,885,267	22,261,638	108,123,545
1945.....	966	6,546	.....	37,477	69,036,039	21,678,167	107,892,495
Clay Products and Other Structural Materials							
CLAY PRODUCTS							
Brick, Tile and Sewer Pipe							
1941.....	127	132	16,734,645	2,557	2,981,278	1,748,511	5,323,433
1942.....	111	115	17,181,503	2,152	2,777,171	1,420,355	5,016,090
1943.....	93	97	16,423,684	1,781	2,565,580	1,233,412	4,674,246
1944.....	98	102	.....	1,889	2,819,912	1,451,686	4,711,125
1945.....	92	98	.....	2,254	3,348,351	1,892,051	6,093,719
STONEWARE AND POTTERY							
1941.....	10	10	642,908	324	245,507	20,062	483,330
1942.....	8	8	612,428	371	295,840	30,884	614,394
1943.....	8	8	739,063	392	344,261	28,395	672,140
1944.....	8	8	.....	358	356,892	66,816	767,798
1945.....	8	8	.....	434	479,855	82,632	844,690
TOTAL CLAY PRODUCTS*							
1941.....	137	142	17,377,553	2,881	3,227,785	1,768,573	5,806,763
1942.....	119	123	17,793,931	2,523	3,073,011	1,451,239	5,630,484
1943.....	101	105	17,162,747	2,173	2,909,841	1,261,807	5,346,386
1944.....	106	110	.....	2,247	3,176,804	1,518,602	5,478,923
1945.....	100	106	.....	2,688	3,828,206	1,974,683	6,938,409
OTHER STRUCTURAL MATERIALS†							
CEMENT							
1941.....	3	8	51,108,294	1,235	1,860,931	5,044,208	9,279,164
1942.....	3	8	51,121,894	1,241	2,059,337	5,414,487	10,213,916
1943.....	3	8	50,438,932	1,209	2,154,218	5,557,089	7,152,763
1944.....	3	8	.....	1,207	2,254,775	5,764,387	6,882,354
1945.....	3	8	.....	1,317	2,398,117	6,005,605	9,416,426

(*) Includes kaolin and other clays. (a) not reported in 1944 and 1945.

(†) A considerable proportion of the values shown for lime and stone sales represents shipments for chemical purposes—see chapter 9.

(c) See footnote at end of this table.

Table 20.—Principal Statistics of the Mineral Industry in Canada, by Industries, 1941-1945—Concluded

1	2	3	4	5	6	7	8
Year	Number of active firms	Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	Capital employed (excluding ore reserves or other unmined material) (a)	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel also freight and smelter charges (c)	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries
			\$		\$	\$	\$

OTHER STRUCTURAL MATERIALS—Concluded

LIME

1941.....	45	50	4,633,946	1,105	1,321,571	2,196,529	4,161,412
1942.....	44	48	4,742,066	1,022	1,312,320	2,598,560	3,932,279
1943.....	41	45	4,607,651	898	1,408,393	1,924,482	4,908,510
1944.....	38	42	.....	815	1,414,426	2,046,550	5,005,235
1945.....	39	44	.....	856	1,473,829	2,068,489	4,663,859

SAND AND GRAVEL

1941.....	1,399	5,407	4,287,789	3,252	2,995,526	474,647	9,901,076
1942.....	1,419	5,217	4,477,547	2,141	2,404,755	677,149	8,328,265
1943.....	1,387	5,054	3,674,501	2,320	2,683,257	379,435	8,626,422
1944.....	1,541	5,381	.....	1,773	2,494,657	391,738	9,888,381
1945.....	1,524	5,011	.....	2,074	2,759,206	416,390	10,151,973

STONE

1941.....	457	539	11,162,036	2,758	2,896,100	1,283,183	6,717,501
1942.....	412	490	10,988,011	2,697	3,454,263	1,517,169	7,229,425
1943.....	407	453	10,954,939	2,473	3,529,755	1,533,827	6,430,552
1944.....	405	466	.....	2,164	3,154,689	1,497,880	5,661,297
1945.....	361	429	.....	2,154	3,114,647	1,451,715	6,714,985

TOTAL OTHER STRUCTURAL MATERIALS

1941.....	1,904	6,004	71,192,065	8,350	9,074,128	8,998,567	50,059,155
1942.....	1,878	5,763	71,829,518	7,101	9,230,676	10,207,565	49,703,886
1943.....	1,858	5,560	69,676,023	6,900	9,775,623	9,594,633	27,118,247
1944.....	1,987	5,897	.....	5,959	9,318,547	9,700,555	27,457,267
1945.....	1,927	5,492	.....	6,401	9,745,799	9,948,199	30,947,243

Total Clay Products and Other Structural Materials

1941.....	2,041	6,146	88,569,618	11,231	12,301,913	10,767,140	35,865,816
1942.....	1,997	5,886	89,123,449	9,624	12,303,686	11,658,604	35,334,363
1943.....	1,939	5,665	86,838,770	9,073	12,685,464	10,656,440	32,464,633
1944.....	2,093	6,007	.....	8,206	12,495,351	11,219,057	32,916,190
1945.....	2,027	5,598	.....	9,089	13,574,005	11,916,882	37,885,652

GRAND TOTAL OF ALL INDUSTRIES

1941.....	3,813	13,234	1,062,669,355	113,227	186,423,186	368,388,700	497,904,632
1942.....	3,576	12,897	1,145,345,913	112,043	198,550,260	431,911,446	514,109,951
1943.....	3,299	12,449	1,183,442,427	112,140	207,575,955	498,885,557	475,529,364
1944.....	3,504	12,952	.....	104,878	204,808,314	443,384,744	454,022,468
1945.....	3,845	13,015	.....	96,250	185,279,926	353,444,326	413,276,800

NOTE.—The net value as given in column 8 represents the gross value as given by the operator less the cost of items indicated in column 7. (a) Not reported in 1944 and 1945.

(c) See note above.

Table 21.—Principal Statistics of the Mineral Industry in Canada, by Provinces, 1941-1945

1 Year	2 Number of operating mines, oil and gas wells, quarries gravel pits, etc.	3 Capital employed (excluding ore reserves or other unmined material) (a) \$	4 Number of employees	5 Salaries and wages \$	6 Cost of process supplies, purchased electricity and fuel also freight and smelter charges (b) (c) \$	7 Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries (*) \$
NOVA SCOTIA						
1941.....	622	48,356,346	15,246	21,388,809	6,684,110	24,535,707
1942.....	694	49,486,020	14,394	22,169,053	6,594,557	25,174,960
1943.....	712	51,261,925	13,852	25,348,097	6,737,166	21,979,202
1944.....	509	.....	13,538	30,815,335	7,664,988	25,208,621
1945.....	656	.....	14,091	26,707,708	7,265,785	23,684,321
NEW BRUNSWICK						
1941.....	428	4,429,485	2,262	2,097,842	421,785	3,231,658
1942.....	433	4,401,029	1,718	1,855,798	404,750	3,176,007
1943.....	433	4,320,846	1,570	1,828,019	396,622	3,249,933
1944.....	429	.....	1,631	2,240,478	463,353	3,631,871
1945.....	427	.....	1,525	2,200,188	480,155	3,636,205
QUEBEC						
1941.....	3,780	298,678,687	23,149	34,008,021	127,618,884	127,649,905
1942.....	3,442	329,023,834	27,235	42,901,445	169,770,830	138,100,940
1943.....	3,332	368,560,300	31,491	52,859,348	234,019,383	134,500,359
1944.....	3,747	.....	27,973	49,498,836	191,719,356	145,964,861
1945.....	3,441	.....	22,374	39,674,306	119,179,856	106,701,600
ONTARIO						
1941.....	6,196	408,374,770	40,496	74,902,555	154,713,109	219,459,986
1942.....	6,324	438,130,467	36,866	72,868,161	168,749,548	212,351,819
1943.....	6,128	426,410,248	33,516	67,732,244	177,688,655	183,488,086
1944.....	6,242	.....	33,194	64,766,975	176,635,812	161,819,719
1945.....	6,379	.....	30,634	61,414,603	153,297,060	155,367,764
MANITOBA						
1941.....	185	41,780,442	3,101	5,312,075	18,966,154	11,898,109
1942.....	173	33,172,231	2,512	4,600,171	12,476,881	9,508,559
1943.....	150	29,033,717	1,777	3,497,951	9,429,404	8,973,959
1944.....	145	.....	1,732	3,369,320	9,697,444	10,288,654
1945.....	156	.....	1,763	3,460,480	11,294,429	10,794,127
SASKATCHEWAN						
1941.....	249	22,851,100	1,977	3,105,529	12,689,122	9,336,756
1942.....	219	34,755,279	2,450	4,401,181	22,710,389	14,487,408
1943.....	206	47,167,799	3,067	5,737,896	24,468,836	23,507,079
1944.....	193	.....	2,652	5,328,535	21,184,997	18,362,133
1945.....	198	.....	2,457	5,020,119	20,969,841	19,332,105

Plants in the provinces do not add to Canada total, owing to the fact that a plant located on the Manitoba-Saskatchewan boundary is counted but once.

* See footnote, preceding table.

(a) Not reported in 1944 and 1945.

(b) Includes fuel and electricity used for metallurgical purposes.

(c) See footnote, preceding table

Table 21.—Principal Statistics of the Mineral Industry in Canada, by Provinces,
1941-1945—Concluded

1	2	3	4	5	6	7
Year	Number of operating mines, oil and gas wells, quarries gravel pits, etc.	Capital employed (excluding ore reserves or other unmined material)	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel also freight and smelter charges (b) (c)	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries (*)
		\$		\$	\$	\$
ALBERTA						
1941.....	742	129,681,543	11,141	17,065,351	3,612,114	36,167,469
1942.....	723	128,642,796	11,446	19,628,105	4,736,312	40,604,704
1943.....	795	128,657,659	12,316	21,825,643	4,982,748	41,767,222
1944.....	852	.....	11,582	23,389,050	5,674,431	42,672,706
1945.....	935	.....	11,438	22,867,506	4,901,551	44,421,660
BRITISH COLUMBIA						
1941.....	1,008	114,213,762	14,801	25,797,418	42,582,946	60,323,299
1942.....	845	110,267,057	14,323	27,166,996	45,101,414	64,378,171
1943.....	654	107,674,852	13,399	25,703,433	40,092,618	54,105,996
1944.....	724	.....	11,871	23,118,465	30,058,974	43,986,511
1945.....	697	.....	11,450	22,520,369	35,678,748	47,859,524
NORTHWEST TERRITORIES						
1941.....	12	4,267,299	553	1,174,903	565,197	(a) 2,355,624
1942.....	29	8,888,280	701	1,737,398	951,183	3,017,569
1943.....	31	8,391,343	800	1,999,661	364,802	2,305,032
1944.....	71	.....	566	1,798,896	213,041	1,219,472
1945.....	120	.....	345	825,572	218,150	252,227
YUKON						
1941.....	12	10,035,921	501	1,570,683	535,279	2,946,119
1942.....	15	10,578,920	398	1,221,952	415,582	3,309,804
1943.....	8	11,963,738	352	1,043,663	705,323	1,652,496
1944.....	8	.....	139	482,424	72,348	867,920
1945.....	7	.....	173	539,075	68,751	1,177,267
Canada						
1941.....	13,234	1,082,669,355	113,227	186,423,186	368,388,700	497,904,632
1942.....	12,897	1,145,345,913	112,043	198,550,260	431,911,446	514,109,951
1943.....	12,449	1,183,442,427	112,140	207,575,955	498,885,557	475,529,364
1944.....	12,952	.....	104,878	204,808,314	443,384,744	454,022,468
1945.....	13,016	.....	96,250	185,279,926	353,444,326	413,276,800

Plants in the provinces do not add to Canada total, owing to the fact that a plant located on the Manitoba-Saskatchewan boundary is counted but once.

* See footnote, preceding table.

(a) The value of Pitchblende refinery products is credited to the non-ferrous smelting and refining industry in Ontario and data relating to Pitchblende mining operations are included with Yukon. The value of Pitchblende refinery products are not included in 1943, 1944 or 1945.

(b) Includes fuel and electricity used for metallurgical purposes.

(c) See footnote, preceding table.

TREND IN EMPLOYMENT, 1945

(Employment and Payroll Statistics Branch—D.B.S.)

MINING

The extraction of coal and of metallic ores generally afforded less employment during 1945 than in the preceding twelve months; the mining of miscellaneous non-metallic minerals other than coal, however, was somewhat more active. The annual index in mining, at 146.9 was lower by 4.9 per cent than that of 1944, being also less than in any earlier year since 1936. Strikes, particularly in the coal mining areas, contributed to the lower average indicated in the year under review, when there was also curtailment in the production of minerals for wartime use. On the other hand, the relaxation of controls as the year progressed brought with it greater activity in gold mining, which had been seriously affected by wartime shortages of labour.

Returns were compiled in 1945 from 502 mine operators with an average staff of 69,173 persons, as compared with 72,427 in 1944. The sums distributed in weekly salaries and wages by the co-operating mining companies and branches averaged \$2,670,924, a sum which represented weekly earnings of \$38.00 per person in recorded employment. This figure was higher than in any other of the major industrial groups, with the exception of the mean of \$38.82 indicated in transportation. The 1944 figure in mining had been \$38.05; that in 1943, \$36.09; while the 1942 average was \$34.81. Although the average earnings per employee were higher during 1945, the index number of aggregate weekly payrolls was lower than in 1944 or any preceding year in the comparatively brief period for which statistics of payrolls are available.

Coal Mining.—Partly as a result of strikes, there was a reduction in employment in coal mining during the year under review, the index number at 92.7 being rather lower than in any earlier year since 1940. A combined working force of 25,551 persons was reported by the 141 coal mines participating in the monthly surveys during 1945, when the trend was uninterruptedly downward from the first of March to the beginning of September. The annual index at 92.7 was 4.7 per cent lower than in 1944. The weekly pay rolls were also lower, averaging \$976,578, as compared with \$989,370 in the year before. The earnings averaged \$38.19, a sum exceeding by \$1.24 the mean indicated in 1944, when the average in turn had been higher than in 1943 and in 1942.

Metallic Ores.—Although employment in the mining of metallic ores continued to decline in 1945, the falling-off as compared with the preceding year was rather less than that in 1944 from the 1943 level, while considerable improvement was shown in the latter months of the year. This took place to a considerable extent in gold mining as the relaxation of labour restrictions permitted the resumption or expansion of operations in this industry. Statements were received from 231 operators employing an average of 32,302 persons, whose weekly earnings in 1944 averaged \$1,324,874, representing \$41.02 per employee. In 1944, 224 establishments had reported a staff of 34,693, while the earnings had averaged \$1,411,020, a mean of \$40.68 per person per week. The index of employment decreased as compared with 1944 by 8.2 per cent and there was a falling-off of 6.5 per cent in the index of payrolls. On the other hand, the average weekly earnings rose by 0.8 per cent.

Non-Metallic Minerals, Other Than Coal.—Continued improvement was indicated during 1945 in the production of miscellaneous non-metallic minerals; the annual index of 169.2 reached a new high, exceeding by 3.3 per cent that of 163.8 in 1944. The reported employees numbered 11,320, as compared with 10,946 in the year before, while the payrolls showed an increase of 3.9 per cent, rising to \$369,472 in 1945. The typical employee in recorded employment earned \$32.64 per week, a sum which was higher than the averages of \$32.34, \$30.84 and \$28.51 recorded in 1944, 1943 and 1942 respectively. The renewal of activity in construction work was reflected in higher employment in most branches of this industry in the year under review.

Table 22.—Employees, Salaries and Wages in the Mineral Industry in Canada, by Provinces, 1945

Province	*Average number of employees					Salaries and wages		
	Salaried employees		Wage-earners		Total †	Salaries	Wages	Total
	Male	Female	Male	Female				
						\$	\$	\$
Nova Scotia.....	546	158	13,378	9	14,091	1,671,131	25,036,577	26,707,708
New Brunswick.....	73	25	1,409	18	1,525	225,179	1,975,009	2,200,188
Quebec.....	2,733	541	18,938	162	22,374	6,824,447	32,849,859	39,674,306
Ontario.....	3,164	673	26,003	794	30,634	9,717,784	51,696,819	61,414,603
Manitoba.....	198	46	1,437	82	1,763	619,388	2,841,092	3,460,480
Saskatchewan.....	295	71	1,972	119	2,457	928,712	4,091,407	5,020,119
Alberta.....	1,572	316	9,324	226	11,435	4,058,923	18,808,583	22,867,506
British Columbia.....	1,413	312	9,286	439	11,450	4,326,266	18,194,103	22,520,369
Yukon.....	23		147		173	123,522	465,553	589,075
Northwest Territories (a).....	108	11	219	7	345	259,254	566,318	825,572
Canada.....	10,125	2,156	82,113	1,856	96,250	28,754,606	156,525,320	185,279,926

*The average number of wage-earners was obtained by adding the monthly figures for individual companies and dividing by 12 irrespective of the number of months worked, the average number of wage-earners in the industry, as in the previous years, is the sum of these individual averages.

†The data are not inclusive of all individuals or syndicates engaged exclusively in prospecting or general exploration.

(a) Pitchblende mining data not available.

Table 23.—Employees, Salaries, and Wages in the Mineral Industry in Canada, by Industries, 1945

Industry	*Average number of employees					Salaries and wages		
	Salaried employees		Wage-earners		Total	Salaries	Wages	Total
	Male	Female	Male	Female				
						\$	\$	\$
METAL MINING								
Alluvial Gold Mines.....	26	6	198	4	234	131,475	561,208	692,683
Auriferous Quartz Mines.....	2,332	249	15,663	144	18,388	6,488,334	31,201,843	37,690,177
Copper-Gold-Silver Mines.....	512	113	3,886	147	4,658	1,694,668	7,968,944	9,663,612
Silver-Cobalt Mines.....	14	5	146	1	166	42,267	204,936	247,203
Silver-Lead-Zinc Mines.....	309	57	2,068	51	2,485	935,838	4,537,744	5,473,582
Nickel-Copper Mines.....	396	42	5,489	70	5,997	1,329,091	11,679,065	13,008,156
Miscellaneous Metal Mines.....	148	30	776	31	985	324,594	1,716,755	2,041,349
Non-ferrous Smelting and Refining.....	2,117	632	13,281	741	16,771	6,812,501	27,040,619	33,853,120
NON-METAL MINING INCLUDING FUELS								
Coal.....	1,458	242	23,571	30	25,301	4,106,549	45,325,416	49,431,965
Natural Gas.....	776	225	873	16	1,890	1,780,031	1,213,060	2,993,091
Petroleum.....	643	191	1,107	27	1,968	1,606,820	2,291,842	3,898,662
OTHER NON-METALLIC MINING								
Asbestos.....	344	85	3,775	33	4,237	820,164	5,859,721	6,679,885
Feldspar and Quartz (a).....	66	9	405	3	483	127,076	640,441	767,517
Gypsum.....	31	6	395	2	434	67,888	579,399	647,287
Iron Oxides.....	5	3	43		51	13,382	44,629	58,011
Mica.....	11	5	131	27	174	31,973	158,165	190,138
Peat (b).....	66	19	960	188	1,233	135,857	1,168,392	1,304,249
Salt.....	93	54	517	60	724	367,132	962,252	1,329,384
Talc and Soapstone.....	9	2	92		103	28,714	106,068	134,782
Miscellaneous.....	92	27	758	2	879	225,824	1,375,244	1,601,068
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS								
Cement.....	87	15	1,159	56	1,317	248,365	2,149,752	2,398,117
Clay Products.....	225	66	2,188	209	2,688	652,758	3,175,448	3,828,206
Lime.....	81	19	748	8	856	194,191	1,279,638	1,473,829
Sand and Gravel.....	83	13	1,976	2	2,074	176,403	2,582,803	2,759,206
Stone.....	201	41	1,908	4	2,154	412,711	2,701,936	3,114,647
Total.....	10,125	2,156	82,113	1,856	96,250	28,754,606	156,525,320	185,279,926

*See footnote, preceding table.

(a) Includes nepheline-syenite mines.

(b) Includes fuel, moss and humus.

Table 24.—The Number of Wage-Earners in the Canadian Mining Industry, 1945, Who Worked the Number of Hours Specified, during One Week in Month of Highest Employment

	30 hours or less	31-43 hours	44 hours	45-47 hours	48 hours	49-50 hours	51-54 hours	55 hours	56-64 hours	65 hours and over	Grand total	Total wages paid in that week*
												\$
By Provinces—												
Nova Scotia.....	456	2,229	53	273	12,468	151	261	53	1,043	198	17,185	626,255
New Brunswick.....	91	202	22	97	2,073	75	243	13	84	43	2,943	70,601
Quebec.....	991	1,615	349	584	14,139	577	1,850	507	2,705	629	23,946	811,029
Ontario.....	948	1,703	414	1,155	22,025	692	1,321	230	2,814	968	32,270	1,199,784
Manitoba.....	81	157	130	100	934	43	107	54	256	33	1,895	66,068
Saskatchewan.....	179	414	309	60	666	81	239	113	185	152	2,398	80,581
Alberta.....	403	991	460	254	8,037	393	336	94	654	243	11,865	519,606
British Columbia.....	621	2,036	714	183	7,073	142	150	50	662	55	11,686	426,752
Yukon.....	6	1	.....	11	3	3	14	3	170	27	238	13,702
Northwest Territories (b).....	11	12	5	.....	79	27	39	3	115	16	307	15,260
Canada Total Male.....	3,482	8,865	2,292	2,588	66,191	2,171	4,508	1,107	8,613	2,334	102,151	3,778,515
Canada Total Female.....	305	495	164	129	1,306	13	52	15	75	30	2,582	60,123
Canada Total.....	3,787	9,360	2,456	2,717	67,497	2,184	4,560	1,120	8,688	2,364	104,733	3,838,638
METAL MINING												
Alluvial Gold Mines.....	15	8	.....	14	68	3	14	3	163	27	315	16,649
Auriferous Quartz Mines.....	676	1,523	146	322	12,949	341	882	139	1,912	409	19,299	733,543
Copper-Gold-Silver Mines.....	205	642	318	105	2,346	100	384	113	285	90	4,588	175,603
Silver-Cobalt Mines.....	4	61	3	4	83	4	8	4	21	11	203	5,616
Silver-Lead-Zinc Mines.....	66	114	17	4	1,884	10	63	3	146	22	2,329	98,154
Nickel-Copper Mines.....	64	84	73	11	6,403	27	330	.....	180	13	7,185	287,666
Miscellaneous Metal Mines.....	43	61	5	17	182	26	82	22	361	181	980	39,356
Non-Ferrous Smelting and Re- fining.....	448	1,008	206	899	11,710	208	581	96	1,384	116	16,656	621,190
Total Male.....	1,434	3,357	731	1,323	34,734	713	2,333	374	4,400	839	50,238	1,940,043
Total Female.....	87	144	37	53	891	6	11	6	52	30	1,317	37,734
Total.....	1,521	3,501	768	1,376	35,625	719	2,344	380	4,452	869	51,555	1,977,777
NON-METAL MINING, INCLUDING FUELS												
Coal.....	846	3,654	384	458	19,886	410	530	57	1,379	343	27,947	1,148,992
Natural gas.....	127	64	149	18	417	196	78	2	110	32	1,193	32,797
Petroleum.....	133	134	18	7	872	21	58	5	223	14	1,486	60,150
Total Male.....	1,094	3,837	550	482	21,141	627	662	64	1,699	389	30,545	1,239,784
Total Female.....	12	15	1	1	34	.....	5	.....	13	.....	81	2,155
Total.....	1,106	3,852	551	483	21,175	627	667	64	1,712	389	30,626	1,241,939
OTHER NON-METAL MINING												
Asbestos.....	33	181	21	120	3,043	75	258	20	220	68	4,039	121,609
Feldspar and Quartz.....	40	35	12	16	130	20	51	23	138	106	571	18,397
Gypsum.....	64	81	66	23	88	16	74	6	64	53	535	15,801
Iron Oxides.....	.....	.....	.....	31	.....	.....	.....	.....	12	.....	43	1,090
Mica.....	21	73	37	18	16	20	27	10	12	16	250	5,650
Peat (a).....	532	878	273	102	296	47	199	75	100	6	2,508	48,949
Salt.....	28	89	41	86	226	50	57	2	32	5	616	19,915
Talc and Soapstone.....	7	7	2	4	6	7	12	4	26	24	99	2,828
Miscellaneous.....	43	73	24	37	263	34	75	64	138	175	926	31,582
Total Male.....	589	1,101	356	354	3,992	263	738	201	737	453	8,784	252,320
Total Female.....	179	316	120	52	107	6	15	3	5	.....	803	13,501
Total.....	768	1,417	476	406	4,099	269	753	204	742	453	9,587	265,821
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS												
Cement.....	35	108	169	48	779	53	80	9	139	21	1,421	47,749
Clay Products.....	139	132	197	255	1,013	258	292	217	474	173	3,150	90,078
Lime.....	30	64	59	16	286	19	153	36	172	94	929	29,328
Sand and Gravel.....	45	60	106	7	4,151	13	35	41	301	176	4,935	100,953
Stone.....	143	226	130	126	369	226	256	169	696	159	2,530	84,993
Total Male.....	365	570	655	429	6,324	568	775	468	1,777	653	12,584	346,368
Total Female.....	27	20	6	23	274	1	21	4	5	.....	381	6,733
Total.....	392	590	661	452	6,598	569	796	472	1,782	653	12,965	353,101

Table 25.—Employees and Salaries and Wages Paid in Canadian Mining Industry, 1930-1945

Year	Nova Scotia		New Brunswick		Quebec		Ontario		Manitoba		Saskatchewan	
	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$
1930.....	15,484	19,284,197	1,391	1,132,306	15,397	15,190,714	24,706	34,433,915	3,021	4,372,044	1,371	1,040,780
1931.....	14,871	15,302,444	1,197	1,048,860	11,141	12,666,586	20,277	30,470,475	2,059	3,096,332	1,092	896,131
1932.....	13,706	11,302,801	1,480	1,123,080	7,694	8,198,379	16,376	24,412,126	1,730	2,106,017	924	748,782
1933.....	13,915	9,852,765	1,629	1,402,114	8,629	8,621,984	17,306	25,600,168	1,379	1,847,251	1,265	1,111,001
1934.....	13,500	13,594,114	1,722	1,276,770	10,362	10,492,169	22,033	32,619,846	1,948	2,796,454	1,461	1,257,282
1935.....	14,550	14,301,510	2,390	1,865,407	11,811	12,794,600	25,264	38,152,140	2,346	3,403,649	1,457	1,343,041
1936.....	15,368	15,980,687	1,744	1,248,431	14,225	15,774,362	31,105	46,899,805	2,932	3,752,367	1,828	1,937,825
1937.....	15,629	18,373,958	3,012	1,509,063	19,121	22,708,131	36,238	58,891,339	3,159	4,301,366	2,307	2,372,443
1938.....	15,591	15,959,095	3,042	2,074,273	20,829	24,485,254	35,791	58,926,900	2,840	4,393,270	2,287	2,470,530
1939.....	15,202	17,371,518	3,263	2,311,835	20,872	25,689,382	37,233	63,220,042	3,027	4,541,992	2,026	2,347,264
1940.....	14,934	19,285,662	2,240	1,939,160	21,726	29,025,418	38,774	66,395,845	3,145	5,107,054	1,961	2,573,878
1941.....	15,246	21,388,809	2,262	2,097,842	23,149	34,008,021	40,496	74,902,555	3,101	5,312,075	1,977	3,105,529
1942.....	14,394	22,169,053	1,718	1,855,798	27,235	42,901,445	36,866	72,868,161	2,512	4,600,171	2,450	4,401,181
1943.....	13,852	25,348,097	1,570	1,828,019	31,491	52,859,348	33,516	67,732,244	1,777	3,497,951	3,067	5,737,896
1944.....	13,538	30,815,335	1,631	2,240,478	27,973	49,498,836	33,194	64,766,975	1,732	3,369,320	2,652	5,328,535
1945.....	14,091	26,707,708	1,525	2,200,188	22,374	39,674,306	30,634	61,414,603	1,763	3,460,480	2,457	5,020,119

Year	Alberta		British Columbia		Yukon		Northwest Territories (a)		Canada	
	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$
1930.....	12,675	16,272,916	14,836	21,412,925	319	835,525	.....	.....	89,200	113,975,332
1931.....	10,579	11,357,722	11,297	16,345,887	296	784,862	.....	.....	72,809	91,969,289
1932.....	9,692	10,476,449	9,565	12,612,151	286	761,585	17	30,679	61,470	71,772,049
1933.....	9,057	9,463,382	9,845	11,455,946	233	545,692	76	131,502	63,334	70,031,805
1934.....	9,843	9,792,297	12,270	15,482,102	286	660,814	80	154,338	73,505	88,126,166
1935.....	9,706	10,862,198	12,352	16,479,606	333	809,067	47	69,341	80,256	100,080,559
1936.....	10,376	11,850,463	12,827	17,908,553	566	1,372,917	28	40,812	90,999	116,766,222
1937.....	10,843	12,924,934	14,282	21,487,277	691	1,502,692	132	221,181	105,414	144,292,354
1938.....	10,612	12,811,975	15,179	21,975,143	794	1,962,941	310	584,619	107,275	145,644,060
1939.....	10,548	13,097,818	14,587	21,698,690	728	1,605,671	273	468,996	107,759	152,353,208
1940.....	10,628	14,535,789	14,420	23,227,719	617	1,518,747	441	880,414	108,886	164,489,666
1941.....	11,141	17,065,351	14,801	25,797,418	501	1,570,683	553	1,174,903	113,227	186,423,186
1942.....	11,435	19,628,105	14,323	27,166,996	398	1,221,952	701	1,737,398	112,032	198,550,260
1943.....	12,316	21,825,643	13,399	25,703,433	352	1,043,663	800	1,999,661	112,140	207,575,955
1944.....	11,582	23,389,050	11,871	23,118,465	139	482,424	566	1,798,896	104,878	204,808,314
1945.....	11,438	22,867,506	11,450	22,520,369	173	589,075	345	825,572	96,250	185,279,926

(a) Data relating to mining of Pitchblende ores included with Yukon until 1943; these data not available for 1944 and 1945.

Table 26.—Wage-earners on Surface, Underground and in Mill, 1945

Province	Metal Mines			Fuels			Ore†		
	Surface (a)	Under-ground	Mill	Surface	Under-ground	Mill	Surface	Under-ground	Mill
Nova Scotia.....	26	41	4	1,894	10,503	.....	593	31	265
New Brunswick.....	.....	.....	.....	332	508	.....	386	11	190
Quebec.....	2,039	3,288	5,572	.....	.....	.....	4,111	518	3,572
Ontario.....	5,733	9,716	7,526	722	.....	.....	1,681	115	1,304
Manitoba.....	344	466	180	.....	.....	.....	287	19	223
Saskatchewan.....	503	352	494	273	243	.....	76	.....	150
Alberta.....	.....	.....	.....	3,315	5,488	.....	133	.....	614
British Columbia.....	1,018	1,860	3,167	573	1,767	.....	943	.....	397
Yukon.....	21	.....	126	.....	.....	.....	.....	.....	.....
Northwest Territories (b).....	189	27	4	6	.....	.....	.....	.....	.....
Total, 1945.....	9,873	15,750	17,073	7,115	18,509	.....	8,210	694	6,745
Total, 1944.....	9,129	18,380	23,861	7,746	18,629	.....	7,715	782	6,365
Total, 1943.....	9,641	20,497	26,974	8,560	18,953	.....	8,332	783	6,297
Total, 1942.....	28,724	24,780	3,969	7,932	19,227	.....	11,743	938	3,427
Total, 1941.....	25,940	28,388	4,198	7,902	19,608	.....	12,915	923	3,268
Total, 1940.....	23,525	27,575	3,833	8,040	19,859	.....	12,979	775	2,958
Total, 1939.....	23,018	26,530	3,750	8,037	19,861	.....	11,406	857	5,766
Total, 1938.....	23,326	24,754	3,713	8,277	20,260	.....	15,808	678	1,894

† Includes asbestos, salt, gypsum, stone quarries, brick plants, etc., etc.

(a) Including non-ferrous smelters and refineries until 1942; since then employees in these plants shown under mill.

(b) Exclusive of data on mining of pitchblende ores.

Table 27.—Fuel and Electricity Used for all Purposes in the

Industry	Bituminous		Anthracite coal		Lignite coal	Coke	Gasoline	Kerosene	Charcoal
	Canadian	Imported	From United States	From other countries					
	Tons	Tons	Tons	Tons	Tons	Tons	imp. gal.	imp. gal.	lb.
METAL MINING									
Alluvial Gold..... Quantity	11		1			2	25,130	304	
\$	821		35			225	14,678	247	
Auriferous Quartz..... Quantity	9,333	45,543	855	19	128	16	465,100	17,226	990
\$	115,737	553,703	13,597	535	1,369	221	155,153	5,026	42
Copper-Gold-Silver..... Quantity	8,060	2,056	73		53,487	94	93,804	10,096	3,305
\$	75,692	28,470	1,359		198,811	1,589	31,184	1,851	75
Silver-Cobalt..... Quantity		851	53			2	6,844		
\$		11,879	893			36	2,562		
Silver-Lead-Zinc..... Quantity	47,357	2,381	3				32,874	1,282	
\$	243,145	28,437	138				10,801	365	
Nickel-Copper..... Quantity		22,713	78			75	36,492	2,717	
\$		198,336	1,152			1,088	10,447	572	
Miscellaneous Metals..... Quantity		3,859	38			28,223	145,084	6,046	
\$		32,222	754			89,137	38,794	1,251	
Non-Ferrous Smelting and Refining Quantity	182,592	599,831	36			299,705	264,415	34,053	1,462,194
\$	1,319,337	5,132,964	535			3,729,413	79,772	7,567	26,754
<i>Total..... Quantity</i>	<i>247,353</i>	<i>677,234</i>	<i>1,137</i>	<i>19</i>	<i>53,615</i>	<i>328,117</i>	<i>1,069,743</i>	<i>71,724</i>	<i>1,466,489</i>
\$	<i>1,754,732</i>	<i>5,986,011</i>	<i>18,463</i>	<i>535</i>	<i>200,180</i>	<i>3,821,710</i>	<i>343,391</i>	<i>16,879</i>	<i>26,871</i>
NON-METAL MINING									
Fuels									
Coal..... Quantity	529,032				28,277		216,978	4,668	
\$	1,833,988				27,201		62,386	1,023	
Natural Gas..... Quantity	10	49	20		2		68,931	45	
\$	105	695	260		20		20,879	9	
Petroleum..... Quantity	1,162	4			8		237,046	497	
\$	7,877	80			104		59,504	107	
<i>Total..... Quantity</i>	<i>530,204</i>	<i>53</i>	<i>20</i>		<i>28,287</i>		<i>522,955</i>	<i>5,210</i>	
\$	<i>1,841,970</i>	<i>775</i>	<i>260</i>		<i>27,325</i>		<i>145,769</i>	<i>1,139</i>	
OTHER NON-METAL MINING									
Asbestos..... Quantity	1,087	29,062	20,836				143,838	7,309	
\$	9,907	294,672	188,735				43,116	1,229	
Feldspar, nepheline Quantity	931	5,105	26			4	129,457	2,133	
syenite and quartz. \$	9,330	46,814	558			43	52,403	352	
Gypsum..... Quantity	7,578	3,243			1,288	724	85,234	1,094	
\$	68,311	26,971			6,369	9,182	20,494	174	
Iron Oxides..... Quantity		807	22				1,920	100	
\$		8,849	319				600	20	
Mica..... Quantity	32	190	33			5	29,594		
\$	366	2,375	465			65	9,926		
Peat..... Quantity	3,313						83,944	135	
\$	33,454						24,233	32	
Salt..... Quantity	11,525	71,128			22,470		10,235	170	
\$	81,912	475,910			85,544		3,074	31	
Talc and Soapstone..... Quantity							13,670	75	
\$							3,961	15	
Miscellaneous..... Quantity	13,726	19,663	17		17,338	24	141,459	1,422	
\$	79,219	187,344	286		54,970	334	40,019	270	
<i>Total..... Quantity</i>	<i>38,192</i>	<i>129,198</i>	<i>20,934</i>		<i>41,096</i>	<i>757</i>	<i>639,351</i>	<i>12,438</i>	
\$	<i>282,999</i>	<i>1,042,935</i>	<i>190,354</i>		<i>146,883</i>	<i>9,624</i>	<i>197,876</i>	<i>2,123</i>	
STRUCTURAL MATERIALS AND CLAY PRODUCTS									
Cement..... Quantity	121,299	206,995					141,359	8,996	
\$	823,988	1,566,420					38,025	1,673	
Clay Products..... Quantity	37,751	95,826	2,546		2,267	1,682	151,713	3,610	
\$	349,159	915,727	24,345		11,130	18,723	44,591	717	
Lime..... Quantity	27,193	83,998	13,480		72	17,466	83,299	124	
\$	231,938	611,727	127,804		299	198,034	24,066	35	
Sand and Gravel..... Quantity	3,765	9,280		15			472,221	1,118	
\$	34,237	73,306		217			134,791	246	
Stone..... Quantity	3,427	9,644	60	3			679,520	23,311	
\$	39,058	86,968	933	45		1,080	203,714	6,920	
<i>Total..... Quantity</i>	<i>193,435</i>	<i>405,743</i>	<i>16,086</i>	<i>18</i>	<i>2,339</i>	<i>19,229</i>	<i>1,588,112</i>	<i>37,159</i>	
\$	<i>1,478,380</i>	<i>3,254,148</i>	<i>153,082</i>	<i>262</i>	<i>11,429</i>	<i>217,337</i>	<i>445,187</i>	<i>9,591</i>	
Grand Total..... Quantity	1,009,184	1,212,228	38,177	37	125,337	348,103	3,760,161	126,531	1,466,489
\$	5,353,081	10,283,869	362,159	797	385,817	4,049,171	1,129,223	29,733	26,871

(a) On outgoing shipments only.

(b) Paid by mine operator only.

(c) Value of compressed air.

(d) Exclusive cost of ores treated.

Mineral Industry in Canada, by Kinds and Industries, 1945

Fuel oil and diesel oil	Wood	Gas		Other fuel	Electricity purchased	Total	Electricity generated for own use	Electricity generated for sale	Process supplies	Freight (a)	Treatment charges (b)
		Manufactured	Natural								
Imp. gal.	Cords	M cu.ft.	M cu.ft.	\$	K.W.H.	\$	K.W.H.	K.W.H.	\$	\$	\$
14,105	1,558						11,890,900	5,955,900			
5,455	19,942			100		41,504		26,722	28,002	6,548	4,694
1,866,309	33,199				705,020,297			54,859,500			
285,918	244,578			840	4,023,880	5,400,999		2,411,144			
813,998					244,000,533			47,243	11,101,264	348,852	1,391,138
106,893	1,349				728,643	1,175,916		64,002,589			
4,414	409				1,830,350			6,431	4,917,595	1,240,533	13,800,559
743	1,979			c)12,106	19,355	49,553			10,479	1,704	8,231
507,880	3,772				81,715,733						
66,145	2,450				465,491	816,972	5,222,900		1,426,479	1,255,218	735,592
1,054,337					143,645,962				6,989,207	3,508	34,529
112,264					439,123	762,982					
882,546	1,621				461,871	753,184			356,248	1,374,264	35,875
115,947	13,208				6,688,355,555						
32,092,705	1,735	9,507	437		14,336,559	26,837,162	68,176,802	5,222,750			
2,171,846	23,653	8,332	430					18,368	19,735,628	(d)	
37,236,294	39,162	9,507	437		7,978,065,180		203,873,691	14,017,785			
2,865,211	307,559	8,332	430	13,046	20,474,922	35,838,272		98,764	44,564,902		
138,488	6				179,930,021		53,863,824	7,574,979			
23,584	63			955	2,044,664	3,993,864		106,989	7,610,586		
56,598	6		1,056,842		25,028		60,800				
5,117	72		199,218		1,139	227,514			18,298		
157,881	1,096		4,227,046		2,372,600		8,400				
14,314	3,320		610,352	13,369	39,324	748,351			117,708		
552,967	1,108		5,283,888		182,327,649		53,933,024	7,574,979			
43,015	3,455		809,570	14,324	2,085,127	4,969,729		106,989	7,746,592		
147,721					145,001,820				1,267,960		
26,205					1,120,153	1,684,017					
326,771	456				3,452,730		2,590,387				
37,264	3,533				30,002	180,799			220,873		
101,372	91		11,010		3,379,305		2,649,806				
11,512	507		4,404		36,695	184,619			391,026		
930	414				210,408						
110	2,900				3,053	15,851			5,900	13,650	
7,157	824				190,734		6,000				
806	2,411				5,192	21,597			28,895		
12,219	108	37			2,346,504		780				
1,828	793	27			30,446	90,863			47,136		
18,574				81	3,721,741		3,394,599				
1,914				53	21,749	670,187			143,077		
20,255	15				1,784,770		164,850				
3,327	75				20,600	27,978			49,266		
3,769,334	1,765	356,903			11,969,783		6,274,845				
252,866	12,241	48,070			104,694	780,313			540,701	22,329	100
4,404,833	3,673	356,940	11,091		172,057,795		20,081,267				
335,832	22,460	48,097	4,457		1,372,584	3,656,224			2,694,834		
65,272	72				146,034,925		417,869				
7,741	422				772,660	3,210,929			1,619,125		
300,924	21,780		1,221,639		15,555,995		273,983				
27,906	146,743		27,203	2,638	211,644	1,780,426			194,257		
1,668,953	40,511				13,066,363		2,587,759				
96,622	268,558			2,803	82,191	1,644,077			217,102		
270,159			360		4,252,955				76,298		
27,522			180		69,593	340,092					
444,419	996		2,746		21,930,684		448,100				
53,450	6,069		1,992		310,882	711,111			740,604		
2,749,727	63,359		1,224,745		200,840,922		3,727,711				
213,241	421,792		29,375	5,341	1,446,970	7,686,635			2,847,386		
44,743,321	107,302	366,447	6,520,161		8,533,291,546		281,615,693	21,592,764			
3,457,299	755,266	56,429	843,832	32,711	25,379,603	52,150,860		205,753	57,853,714		

Table 28.—Fuel and Electricity Used for all purposes in the

Province	Bituminous		Anthracite coal		Lignite coal	Coke	Gasoline	Kerosene	Charcoal
	Canadian	Imported	From United States	From other countries					
	Tons	Tons	Tons	Tons					
Nova Scotia.....Quantity	325,180					14	197,421	3,223	
	\$ 1,382,036					134	50,042	654	
New Brunswick.....Quantity	27,671						65,933	277	
	\$ 186,442						16,305	57	
Quebec.....Quantity	75,835	300,806	34,656	4		2,705	1,203,266	67,847	52,868
	\$ 693,108	2,812,020	322,269	69		33,698	373,730	15,680	1,087
Ontario.....Quantity	7,885	911,341	3,456	18		5	1,306,744	29,287	1,405,560
	\$ 77,504	7,470,086	38,402	367		69	3,417,455	6,597	25,455
Manitoba.....Quantity	53,803	16	43		23,830	806	69,679	2,510	661
	\$ 469,626	340	648		92,212	11,121	24,541	826	15
Saskatchewan.....Quantity	68,288	62			47,882	48	129,343	3,615	2,644
	\$ 561,430	1,360			93,301	648	37,544	915	60
Alberta.....Quantity	218,295				5		348,463	3,064	
	\$ 642,437				55		87,171	675	
British Columbia.....Quantity	232,244		22	15	53,615	54,870	392,467	14,482	4,756
	\$ 1,344,479		840	361	200,180	585,889	115,220	3,038	254
Yukon.....Quantity	11					2	20,395	271	
	\$ 821					226	12,074	223	
Northwest Territories....Quantity	2						35,450	1,955	
	\$ 198						20,549	1,067	
Canada.....Quantity	1,009,184	1,212,228	38,177	37	125,337	348,103	3,769,161	126,531	1,466,489
	\$ 5,358,081	10,283,869	362,159	797	385,817	4,049,171	1,129,233	29,732	26,871

(a) On outgoing shipments only.
(b) Paid by mine operator only.

Table 29.—Fuel and Electricity Used Only for Metallurgical

Province	Bituminous coal		Anthracite coal		Lignite coal	Coke	Charcoal
	Canadian	Imported	From United States	From Other Countries			
	Tons	Tons	Tons	Tons			
Quebec.....Quantity	12,332	71,178				1,586	52,868
	\$ 115,964	720,192				21,461	1,087
Ontario.....Quantity		485,608				243,056	1,404,570
		4,050,837				3,118,925	25,413
Manitoba.....Quantity	12,643						
	\$ 111,891						
Saskatchewan.....Quantity	50,572						
	\$ 447,565						
British Columbia.....Quantity	92,873					54,114	4,756
	\$ 558,282					577,546	254
Canada.....Quantity	168,420	556,786				298,756	1,462,194
	\$ 1,233,702	4,771,029				3,717,932	26,754

*All used in the non-ferrous smelting and refining industry and included in table 28.

Table 30.—Electricity Purchased by Canadian Mining Industry, 1935-1945

Year	Auriferous Quartz Mining (gold mines)		Total All Metal Mines (including non-ferrous smelters and refineries)		Total entire mining industry	
	K.W.H.	\$*	K.W.H.	\$*	K.W.H.	\$*
1935.....	464,146,582	3,722,163	2,320,385,917	9,415,062	2,591,470,745	12,546,298
1936.....	449,026,003	4,345,066	2,841,045,187	10,783,296	3,151,192,519	14,055,915
1937.....	629,083,378	5,031,691	3,368,047,901	12,442,423	3,744,919,549	16,135,702
1938.....	741,866,953	5,333,427	4,125,037,129	13,917,518	4,441,098,287	17,485,652
1939.....	777,832,223	5,803,160	4,449,477,330	13,060,673	4,817,050,497	18,749,417
1940.....	868,846,323	5,893,562	5,105,497,931	17,005,546	5,569,961,386	21,066,734
1941.....	947,563,696	6,277,626	7,105,275,873	22,373,156	7,630,138,911	26,710,350
1942.....	846,900,417	5,856,971	9,626,254,575	29,004,724	10,186,657,256	33,614,088
1943.....	738,795,434	4,947,060	12,288,710,388	32,308,193	12,834,163,470	36,971,372
1944.....	709,437,980	4,668,292	12,392,717,185	27,100,576	12,917,130,002	31,940,718
1945.....	705,020,297	4,023,880	7,978,065,180	20,474,922	8,533,291,546	25,379,603

*Includes service charges, for previous years see annual mineral production report for 1942.

Mineral Industry in Canada, by Provinces, 1945

Fuel oil and diesel oil	Wood	Gas		Other fuel	Electricity purchased	Total	Electricity generated for own use	Electricity generated for sale	Process supplies	Freight (a)	Treatment charges (b)
		Manu- factured	Natural								
Imp. gal.	Cords	M cu.ft.	M cu. ft.	\$	K.W.H.	\$	K.W.H.	K.W.H.	\$	\$	\$
129,330	340	277,403			116,077,329		23,298,351	3,402,933			
14,186	1,721	42,107			1,276,992	2,767,572		37,166	4,456,302	161	1,251
21,982	11,491		40,273		2,145,999		1,554,806				
2,592	84,542		16,357	32	41,925	348,316			107,361		
19,217,570	34,046	9,507			5,552,329,034		81,280,152	5,222,750			
1,462,485	253,220	8,332		424	13,145,561	19,121,683		18,368	16,458,673	938,766	9,611,966
18,772,022	27,120	79,537	230,248		1,613,197,780		27,734,464				
1,384,749	182,892	5,990	135,693	12,231	6,305,540	19,455,077			25,521,137	1,473,648	670,690
333,230	13,850				133,449,761		2,453,499				
35,575	94,072				395,627	1,124,603			1,776,572	530,190	1,420,600
1,708,537	623		13,318		303,383,597		2,425,723	17,460			
96,185	4,603		1,998		392,787	1,190,831		1,566	2,647,050		2,900,235
284,738	2,166		6,236,322		58,277,124		14,333,299	267,631			
28,756	9,561		689,784	14,324	653,262	2,126,025		20,154	2,729,757		
4,143,548	13,536				752,124,224		103,937,347	4,339,946			
408,632	70,884			5,700	3,131,740	5,862,217		55,284	4,043,835	1,375,760	1,396,448
12,199	1,150					33,556	11,630,900	5,955,900			
4,900	15,312							26,722	19,742	9,423	6,030
120,165	2,980				2,306,718		12,967,152	2,386,144			
24,239	38,459				36,168	120,680		46,493	93,285	687	3,498
44,743,321	107,302	366,447	6,520,161		8,533,291,546		281,615,693	21,592,764			
3,457,299	755,266	56,429	843,832	32,711	25,379,603	52,150,860		205,753	57,853,714		

Purposes in the Mineral Industry of Canada, by Provinces, 1945

Gasoline	Kerosene	Fuel oil and diesel oil	Wood	Gas		Other	Electricity	Total	Electricity generated own use
				Manu- factured	Natural				
Imp. gal.	Imp. gal.	Imp. gal.	Cords	M cu. ft.	M cu. ft.	\$	K.W.H.	\$	K.W.H.
17,624	10,732	15,282,911	537	9,507			4,832,215,649		52,692,752
5,877	2,819	1,036,044	13,453	8,332			9,092,892	11,018,121	
34,202	6,095	15,723,856	9		437		271,748,789		
8,285	1,273	1,009,380	60		430		869,019	9,083,602	
		5,550	116				35,395,600		
		659	828				35,972	149,350	
		22,201	466				141,582,400		
		2,636	3,313				143,890	597,404	
66,939	2,089	885,490	474				475,467,952		
21,709	627	106,375	4,755				1,821,042	3,090,596	
118,765	18,916	31,919,978	1,602	9,507	437		5,756,410,399		52,692,752
55,871	4,719	2,155,074	22,409	8,332	430		11,962,815	23,939,067	

DOMINION BUREAU OF STATISTICS

Table 31.—Power Equipment in Use and Power Equipment in
ORDINARILY IN USE

Industry	Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power em- ployed	Electric motors run by primary power in same plant	Boilers
METAL MINING—										
Alluvial Gold Mines.....No.			3	8	4	15		15	93	1
H.P.			325	94	15,080	15,490		15,499	3,893	35
Auriferous Quartz Mines.....No.	4	4	45	77	13	143	8,468	8,611	795	156
H.P.	132	142	9,175	4,706	13,882	23,037	235,331	263,368	15,502	13,128
Copper-Gold-Silver Mines.....No.		1	17	20	6	44	2,775	2,819	574	25
H.P.		10,000	4,226	647	8,900	23,773	105,373	129,146	18,238	3,898
Silver-Cobalt Mines.....No.							38	38		5
H.P.							851	851		325
Silver-Lead-Zinc Mines (a).....No.		3	19	9	5	36	918	954	395	16
H.P.		6,000	2,939	223	1,016	10,178	22,393	32,571	7,492	2,817
Nickel-Copper Mines.....No.							924	924		5
H.P.							42,033	42,033		500
Miscellaneous Metal Mines.....No.			27	18		45	369	414		10
H.P.			3,380	815		4,195	15,357	19,552		610
Non-Ferrous Smelting and Refining.....No.	20	12	10	13	5	60	10,670	10,730	388	34
H.P.	920	9,470	2,789	953	28,200	42,332	262,339	304,671	5,325	27,305
Total.....No.	24	20	121	145	33	348	24,162	24,505	2,245	252
H.P.	1,052	25,612	22,834	7,438	67,078	124,014	683,677	807,691	50,450	48,618
NON-METAL MINING, INCLUDING FUELS—										
Coal.....No.	124	13	20	229	2	388	3,250	3,638	453	167
H.P.	50,340	18,564	1,323	5,027	12,000	87,254	122,117	209,371	22,343	49,586
Natural Gas.....No.	4	4	4	273		285	96	381	41	14
H.P.	140	80	1,200	9,457		10,877	1,159	12,036	1,507	2,460
Petroleum.....No.	23	6	10	114		153	178	331	81	81
H.P.	5,030	255	2,011	3,070		10,366	1,239	11,605		6,389
Total.....No.	151	23	34	616	2	826	3,524	4,350	494	262
H.P.	55,510	18,899	4,534	17,554	12,000	108,497	124,515	233,012	23,850	58,435
OTHER NON-METAL MINING										
Asbestos.....No.	7	1	4	10		22	1,129	1,151		4
H.P.	250	120	280	598		1,248	54,847	56,095		110
Feldspar, Nepheline syenite and quartz.....No.	8		22	38		68	120	188	134	11
H.P.	508		2,447	1,930		4,885	2,508	7,393	1,267	968
Gypsum.....No.	3		20	24		47	115	162	32	3
H.P.	1,125		2,624	1,174		4,923	4,430	9,353	5,602	450
Iron oxides.....No.							13	13		
H.P.							100	100		
Mica.....No.	2		2	15		19	9	28		3
H.P.	75		100	480		655	215	870		88
Peat.....No.	1	2	5	100		108	92	200	1	
H.P.	30	50	265	2,979		3,324	1,293	4,617	2	
Salt.....No.	16	14		2		32	174	206	306	8
H.P.	1,385	1,840		22		3,247	1,091	4,338	2,758	3,970
Talc and Soapstone.....No.			4	12		16	49	65	12	
H.P.			343	325		668	795	1,463	121	
Miscellaneous.....No.	6		17	22	2	47	322	369	148	16
H.P.	25		2,153	1,088	650	3,916	5,729	9,645	1,739	735
Total.....No.	43	17	74	223	2	559	2,023	2,382	633	45
H.P.	3,398	2,010	8,212	8,596	650	22,866	71,008	93,874	11,489	6,321

Reserve or Idle, in the Mineral Industry in Canada, by Industries, 1945

IN RESERVE OR IDLE

Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers	Motor generator sets in use and in reserve Total
1		2	4		7		7	269	1	10
15		16	42		73		73	1,785	15	247
12	1	37	82	1	133	1,378	1,511	299	51	455
2,057	5	5,807	6,852	780	15,501	30,903	46,404	5,623	3,375	19,165
	3	3	2		8	193	201	37	6	102
	7,500	710	245		8,455	3,901	12,356	2,034	882	28,736
			1		1	11	12			
			1		1	261	262			
		9	6		15	71	86	37	3	30
		1,250	467		1,717	2,946	4,663	799	76	3,765
						86	86			83
						4,749	4,749			32,419
		1	6		7	21	28			7
		110	162		272	1,086	1,358			188
2	4	5	9	6	26	2,621	2,647	53	16	215
2,574	6,515	1,075	1,055	13,882	25,101	83,317	108,418	3,228	15,315	107,024
15	8	57	110	7	197	4,381	4,578	695	77	902
4,646	14,020	8,968	8,824	14,662	51,120	127,163	178,283	13,469	19,663	191,514
29	2	2	16		49	260	309	29	23	92
7,219	2,005	77	372		9,673	6,004	15,677	675	4,419	6,291
			4				4			5
29	3		21		251		251			203
10,045	214		252		53	14	67		11	26
					10,511	334	10,845		1,037	555
58	5	2	41		106	274	380	29	34	123
17,264	2,219	77	875		20,435	6,338	26,773	675	5,456	7,019
			5		5	131	136			7
			55		55	5,062	5,117			1,683
			3		3	6	9	16		15
			106		106	82	188	99		331
5		1	8		14	7	21	1		11
235		36	323		594	310	904	35		859
3			1		4	2	6		1	
115			3		118	30	148		40	
		2	8		10	2	12			2
		140	282		422	25	447			9
						10	10	16	5	2
						73	73	176	835	18
						4	4			1
						320	320			1
1		6	3		10	27	37	25	7	8
32		730	330		1,092	413	1,505	282	338	654
9		9	28		46	189	235	58	13	46
382		906	1,099		2,587	6,315	8,792	592	1,213	3,553

Table 31.—Power Equipment in Use and Power Equipment in
ORDINARILY IN USE

Industry	Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—										
Cement..... No.	1		5	42		48	1,470	1,518	26	8
H.P.	50		1,176	1,306		2,532	76,136	78,668	968	475
Clay Products..... No.	32		7	55	17	111	532	643	25	50
H.P.	3,194		507	1,889	712	6,302	12,667	18,969	234	4,872
Lime..... No.	3		5	13	6	27	506	533	69	9
H.P.	125		570	462	105	1,262	8,025	9,287	786	1,373
Sand and Gravel..... No.	14		18	66	7	105	215	320		6
H.P.	729		1,678	3,267	240	5,914	6,793	12,707		435
Stone..... No.	36	1	56	180	9	282	872	1,154	34	33
H.P.	1,636	2	4,493	6,329	344	12,804	24,467	37,271	1,104	1,688
Total..... No.	86	1	91	356	39	575	3,595	4,168	154	106
H.P.	5,734	2	8,424	13,253	1,401	28,814	128,088	156,902	3,092	8,843
Grand Total 1945..... No.	304	61	320	1,340	76	2,101	33,304	35,405	3,536	665
H.P.	65,694	46,523	44,004	46,841	81,129	284,191	1,007,288	1,291,479	88,881	122,217
Grand Total 1944..... No.	396	62	305	1,329	133	2,225	34,505	36,730	3,604	760
H.P.	87,944	46,424	41,937	47,188	101,616	285,109	1,049,483	1,365,592	87,683	136,266

Table 32.—Power Equipment in Use, and Power Equipment in Reserve
ORDINARILY IN USE

Province	Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers
Nova Scotia..... No.	44	9	22	34	1	110	1,037	1,147	255	45
H.P.	37,451	16,335	2,720	1,231	20	57,757	69,288	127,045	15,387	30,469
New Brunswick..... No.	10		4	48		62	258	320	14	19
H.P.	1,455		285	1,291		3,031	1,865	4,896	227	1,260
Quebec..... No.	27	14	97	277	9	424	10,143	10,567	562	129
H.P.	890	5,050	14,642	9,715	31,044	61,341	293,235	354,576	9,127	25,210
Ontario..... No.	79	15	77	494	5	670	12,914	13,584	698	189
H.P.	3,835	4,022	8,232	20,223	2,670	38,982	385,911	424,893	9,773	24,363
Manitoba..... No.	4	1	8	31		44	1,012	1,056	106	12
H.P.	215	500	810	583		2,108	35,458	37,566	1,438	2,575
Saskatchewan..... No.	13		22	50		36	1,782	1,868	139	23
H.P.	1,047	1,250	2,423	1,106		5,886	70,794	76,620	1,591	3,161
Alberta..... No.	100	14	26	229		369	1,879	2,248	319	185
H.P.	16,671	3,137	3,878	5,578		29,284	50,717	79,981	8,192	22,823
British Columbia..... No.	27	7	59	165	57	315	4,222	4,537	1,327	56
H.P.	4,130	16,229	10,370	6,743	27,695	65,167	98,883	164,050	38,479	11,940
Yukon (a)..... No.			1	1	3	5		5	85	1
H.P.			250	8	15,000	15,258		15,258	3,830	35
N.W.T..... No.			4	11	1	16	57	73	21	6
H.P.			394	363	4,700	5,457	1,137	6,594	837	381
Canada..... No.	304	61	320	1,340	76	2,101	33,304	35,405	3,526	665
H.P.	65,694	46,523	44,004	46,841	81,129	284,191	1,007,288	1,291,479	88,881	122,217

Reserve or Idle, in the Mineral Industry in Canada, by Industries, 1945—Concluded

IN RESERVE OR IDLE

Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers	Motor generator sets in use and in reserve Total
			6		6	291	297	6	1	14
			442		442	13,409	13,851	210	40	1,444
2			4		6	37	43	1	5	6
65			83		148	1,933	2,081	5	355	750
						11	11		7	
						329	329		447	
2		1	4		7	22	29		3	1
170		115	103		388	638	1,026		170	2
7	1	1	13	4	26	116	142		2	1
345	2	75	505	150	1,077	4,681	5,758		65	16
11	1	2	27	4	45	477	522	7	18	22
580	2	190	1,133	150	2,055	20,990	23,045	215	1,077	2,212
93	14	70	206	11	324	5,321	5,715	789	142	1,093
22,872	16,241	10,141	11,931	14,812	75,997	160,806	236,803	14,951	27,409	204,360
102	18	72	216	7	415	3,751	4,166	668	144	1,054
13,746	16,462	10,287	11,122	960	52,577	106,286	158,857	13,073	16,819	205,888

or Idle, in the Mineral Industry in Canada, by Provinces, 1945

IN RESERVE OR IDLE

Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers	Motor generator sets in use and in reserve Total
9		1	6		16	60	76	1	7	26
1,368		125	360		1,853	2,056	3,909	35	2,588	2,385
2		1	4		7	55	62			
100		2	48		150	766	916			
8	1	18	64	6	97	2,282	2,359	48	44	264
322	4,000	2,405	4,658	13,882	25,267	56,681	81,948	1,892	15,345	28,356
14	2	17	69		102	1,903	2,005	84	37	513
3,354	7	2,941	4,930		11,232	77,115	88,347	4,535	2,953	102,069
	1	4	4		9	51	60	18	4	30
	503	586	550		1,639	1,798	3,437	286	300	8,249
2	2	4	5		13	133	151	24	6	45
232	2,012	565	187		2,996	4,163	7,159	527	1,160	32,166
45	5	1	23		74	105	179	30	25	90
15,207	2,219	75	393		17,824	2,664	20,558	680	2,644	4,138
13	3	18	30	5	69	745	814	180	17	97
2,289	7,500	2,031	800	930	13,560	15,263	28,813	3,390	2,244	26,559
		3			3		3	264		8
		530			530		530	1,670		234
		3	1		4	2	6	140	2	15
		881	5		886	300	1,186	1,936	175	204
93	14	70	206	11	594	5,321	5,715	789	142	1,093
22,872	16,241	10,141	11,931	14,812	75,997	160,806	236,803	14,951	27,409	204,360

CHAPTER TWO

THE GOLD MINING INDUSTRY IN CANADA

Including—(a) The Alluvial Gold Mining Industry; (b) The Auriferous Quartz Mining Industry; (c) The Copper-Gold-Silver Mining Industry; (d) Miscellaneous Data on Monetary Gold and World Gold Production, Prices, etc.

Definition of the Industry—Gold mining in Canada is classified into three principal industries—(a) the recovery of gold from the gravels and sands of stream channels or beaches or what is defined as “The Alluvial Gold Mining Industry”; (b) the recovery of lode gold, which is designated “The Auriferous Quartz Mining Industry” and in which industry gold is usually the most important economic constituent of the ores mined and quartz the predominant gangue mineral; (c) gold is often found in various other mineral deposits, more particularly in those of copper, and for this reason the review of Canada’s “Copper-Gold-Silver Mining Industry” is included here to complete a more comprehensive survey of Canadian gold production.

During 1945 the Canadian production of fine gold was 2,696,727 troy ounces valued at \$103,823,990, showing a decrease from the gold production of 2,922,911 troy ounces valued at \$112,532,073 in 1944. In all years since 1931 the quantity of gold recovered has been higher than the production for 1945. The cessation of hostilities has released many potential employees from the armed services, but the return of former miners to their pre-war occupations has not been very rapid. Mining machinery and materials for the development of new gold mines or the expansion of older ones has remained in restricted supply.

As in the previous year the ratio of gold production remained nearly the same for the leading provinces. Contributions from Ontario, Quebec and British Columbia were respectively 60·3%, 24·5% and 6·9%. Saskatchewan, Manitoba, Yukon, Northwest Territories, Nova Scotia and Alberta added to the balance of the year’s output.

Gold yield according to the type of deposit or nature of recovery included: in crude gold bullion produced at “gold mines”, 76·77%; in blister and anode copper, 15·3%; in ores, mattes, slags, etc., exported, 6·29%; in alluvial gold, 1·15%; in base bullion at lead smelters, 0·09%.

From 1858 to 1945 inclusive, the Canadian production of gold was 94,944,481 troy ounces valued at \$2,788,211,971 in Canadian funds.

Exploration and development work on new mines was largely confined to diamond drilling. The footage drilled, on auriferous quartz deposits, was 4,602,466 or more than double the footage of the preceding year. This increase in diamond drilling absorbed a number of employees who might have been otherwise employed in producing mines.

Table 33.—Production of New Gold in Canada, by Provinces and Sources, 1944 and 1945
(Gold at \$20·671834 per fine ounce)

	1944		1945	
	Fine troy ounces	\$	Fine troy ounces	\$
NOVA SCOTIA—				
In gold bullion.....	5,840	120,724	3,291	68,031
Estimated exchange equalization on gold produced.....		104,116		58,673
Total Value—Canadian Funds.....		224,840		126,704
QUEBEC—				
In gold bullion.....	485,892	10,044,279	419,673	8,675,411
In anode copper (b).....	245,886	5,082,915	225,443	4,660,320
In ores, etc., exported.....	15,006	310,201	16,492	340,920
Total.....	746,784	15,437,395	661,608	13,676,651
Estimated exchange equalization on gold produced.....		13,313,789		11,795,257
Total Value—Canadian Funds.....		28,751,184		25,471,908

Table 33.—Production of New Gold in Canada, by Provinces and Sources, 1944 and 1945
—Concluded

	1944		1945	
	Fine troy ounces	\$	Fine troy ounces	\$
ONTARIO—				
(c) Porcupine Area—In gold bullion.....	873,062	18,047,793	830,909	17,176,413
(c) Kirkland Lake—In gold bullion (a).....	498,260	10,299,948	479,346	9,908,961
(c) Other gold mines—In gold bullion.....	305,208	6,309,209	223,744	4,625,199
In converter copper from nickel-copper ores.....	50,516	1,044,259	44,544	920,806
In ores, matte, etc., exported.....	4,790	99,018	46,825	967,958
Total.....	1,731,836	35,800,227	1,625,368	33,599,337
Estimated exchange equalization on gold produced.....		30,875,459		28,977,331
Total Value—Canadian Funds.....		66,675,686		62,576,668
MANITOBA—				
In gold bullion.....	40,669	840,703	38,326	792,268
In blister copper.....	31,408	649,261	32,329	668,300
In ores, etc., exported.....	2,091	43,225		
Total.....	74,168	1,533,189	70,655	1,460,568
Estimated exchange equalization on gold produced.....		1,322,279		1,259,650
Total Value—Canadian Funds.....		2,855,468		2,720,218
SASKATCHEWAN—				
In alluvial gold.....	5	103		
In gold bullion.....				
In blister copper.....	122,777	2,538,026	108,568	2,244,300
Total.....	122,782	2,538,129	108,568	2,244,300
Estimated exchange equalization on gold produced.....		2,188,978		1,935,568
Total Value—Canadian Funds.....		4,727,107		4,179,868
ALBERTA—				
In alluvial gold.....	51	1,054	7	145
Estimated exchange equalization on gold produced.....		909		124
Total Value—Canadian Funds.....		1,963		269
BRITISH COLUMBIA—				
In alluvial gold.....	9,402	194,357	10,071	208,186
In gold bullion.....	98,117	2,028,258	88,261	1,824,517
In base bullion.....	3,399	70,264	2,323	48,021
In ores, etc., exported.....	85,939	1,776,516	86,199	1,781,891
Total.....	196,857	4,069,395	186,854	3,862,615
Estimated exchange equalization on gold produced.....		3,509,599		3,331,264
Total Value—Canadian Funds.....		7,578,994		7,193,879
YUKON—				
In alluvial gold.....	23,816	492,321	31,721	655,731
In ores exported.....	2	41		
Total.....	23,818	492,362	31,721	655,731
Estimated exchange equalization on gold produced.....		424,631		565,527
Total Value—Canadian Funds.....		916,993		1,221,258
NORTHWEST TERRITORIES—				
In ores, etc., shipped.....				
In gold bullion produced.....	20,775	429,457	8,655	178,915
Total.....	20,775	429,457	8,655	178,915
Estimated exchange equalization on gold produced.....		370,381		154,303
Total Value—Canadian Funds.....		799,838		333,218
Total for Canada.....	2,922,911	60,421,932	2,696,727	55,746,293
Total Estimated Exchange Equalization on Gold Produced.....		52,110,141		48,077,697
Grand Total Value, Including Exchange.....		112,532,073		103,823,990

NOTE.—The estimated average price of a troy ounce of fine gold in Canadian funds was \$38.50 in both 1945 and 1944.

(a) Includes production of Larder Lake area.

(b) Includes a considerable quantity of gold recovered from gold ores.

(c) Includes certain quantities of gold contained in slags, ores, etc., shipped to Canadian and foreign smelters.

Table 34.—Production of Gold From Auriferous Quartz and Base Metal Mines, by Months, 1945 and 1946(*)

Month	Gold production from base metal mines		Gold production from auriferous quartz mines and placer deposits	
	1945	1946	1945	1946
	(fine ounces)			
January.....	43,480	39,475	193,730	198,975
February.....	38,306	38,396	177,687	190,543
March.....	45,187	43,356	187,423	204,562
April.....	43,141	41,124	184,434	197,092
May.....	42,975	36,538	178,313	203,801
June.....	42,358	27,510	173,444	206,873
July.....	38,809	36,326	175,006	203,228
August.....	39,620	33,557	175,766	197,643
September.....	38,881	31,897	176,276	198,007
October.....	43,841	32,123	189,646	208,705
November.....	32,389	28,288	192,153	202,916
December.....	40,026	15,616	203,836	211,853
Total—Calendar Year.....	489,013	404,206	2,207,714	2,421,198

(*) Subject to revision; 1946 data not adjusted to final totals for year.

Table 35.—Production of Gold and Silver in Canada by Principal Mines, 1945

Property and Province	Ore hoisted tons	Material sorted (discarded) tons	Ore treated tons	Gold produced fine oz.	Silver produced fine oz.	Mill capacity 24 hours tons	See footnotes
NOVA SCOTIA—							
Consolidated Mining & Smelting Co. of Canada Ltd.....	7,342		7,354	1,038	71	40	(a)
Queens Mines Limited.....	5,184		5,184	1,081	31	120	(a)
Total Nova Scotia.....				3,291(m)			
QUEBEC—							
Beattie Gold Mines (Quebec) Limited.....	26,225		(d)			1,800	(d)
Belleterre Quebec Mines Ltd.....	125,701		112,918	41,317	3,189	350	(c)
Canadian Malartic Gold Mines Limited.....	327,093		327,093	36,132	47,161	1,000	(c)
East Malartic Mines Limited.....	304,890		304,890	38,991	10,581	1,500	(c)
Francoeur Gold Mines Ltd.....	77,962		77,962	11,524			(e)
Lamaque Mining Co. Ltd.....	157,365		157,365	44,983	8,000	1,200	(c)
Malartic Gold Fields Ltd.....	187,315		187,315	32,421	1,188	750	(c)
Mic-Mac Mines Ltd.....	190,869		190,615	9,986	440	650	(a) (f)
O'Brien Gold Mines Ltd.....	47,939		48,297	25,116	1,803	200	(a) (c) (g)
Perron Gold Mines Ltd.....	110,829	3,081	106,485	19,432	1,851	400	(c)
Powell Rouyn Gold Mines Ltd.....	100,034		98,519	14,746			(e)
Senator-Rouyn Ltd.....	86,812		84,005	12,534	950	300	(c)
Sigma Mines (Quebec) Ltd.....	299,608		299,608	48,920	10,137	1,100	(c)
Siscoe Gold Mines Ltd.....	267,722	1,556	266,166	33,571	2,358	900	(a) (c)
Sladen-Malartic Mines Ltd.....	175,737		175,737	18,777	11,099	700	(c)
Stadacona Rouyn Mines Ltd.....	125,927		125,927	21,873	3,778	500	(c)
Sullivan Consolidated.....	152,634	28,574	124,060	28,643	8,687	500	(c)
West Malartic Mines Ltd.....	72,443		72,443	6,229	437	300	(c)
Total Principal Gold Mines.....	2,837,105	33,211	2,759,405	445,195	111,659	12,150	
Copper-gold-silver and other ores.....				216,413			
Total Quebec.....				661,608			
ONTARIO—							
<i>Porcupine District</i>							
Aunor Gold Mines Ltd.....	143,390		143,390	56,143	4,554	300	(c)
Bonetail Gold Mines Ltd.....	25,828	1,836	23,992	4,381	437		(c)
Broulan Porcupine Mines Ltd.....	102,470	13,078	89,392	16,933	1,720	350	(c)
Buffalo Ankerite Gold Mines Ltd.....	200,253	2,562	197,691	32,532	3,396	1,300	(c)
Coniaurum Mines Ltd.....	98,210		98,210	26,275	5,065	500	(c)
Delnite Mines Ltd.....	66,283		66,120	9,422	828	520	(c)
Dome Mines Ltd.....	527,100		527,100	126,677	26,385	1,700	(a) (c)
Hallnor Mines Ltd.....	95,436		95,436	44,757	3,434	400	(c)
Hollinger Cons. Gold Mines Ltd. (Timmins).....	936,596		933,748	219,213	45,549	3,900	(c)
Hollinger Cons. Gold Mines Ltd. (Ross).....	73,605		73,538	11,619	24,491	300	(c)
McIntyre Porcupine Mines Ltd.....	566,171		565,320	161,044	33,160	2,400	(c)

For footnotes, see end of table, p. 44.

Table 35.—Production of Gold and Silver in Canada by Principal Mines, 1945—Continued

Property and Province	Ore hoisted	Material sorted (discarded)	Ore treated	Gold produced	Silver produced	Mill capacity 24 hours	See footnotes
	tons	tons	tons	fine oz.	fine oz.	tons	
ONTARIO—Con.							
<i>Porcupine District—Con.</i>							
Pamour Porcupine Mines Ltd.	417,914		417,914	37,915	4,723	1,600	(e)
Paymaster Cons. Mines Ltd.	126,386		130,793	27,299	10,754	600	(c)
Preston East Dome Mines Ltd	221,598		222,359	56,328	6,759	1,000	(a) (c)
<i>Kirkland Lake District</i>							
Bidgood Kirkland Gold Mines Ltd.	32,617		32,608	10,859	2,365	125	(c)
Kirkland Lake Gold Mining Co. Ltd.	85,358		85,358	28,179	3,340	400	(c)
Lake Shore Mines Ltd.	291,854		291,854	117,249	25,183	2,300	(c)
Macassa Mines Ltd.	71,988		71,988	28,154	5,801	400	(c)
Sylvanite	114,102		114,227	37,648	7,397	600	(c)
The Teck-Hughes Gold Mines Ltd.	106,006		106,006	28,506	2,621	600	(c)
Toburn Gold Mines Ltd.	41,655		41,655	12,648	4,151	175	(c)
Upper Canada	83,708		83,708	26,859	12,641	250	(c)
Wright-Hargreaves Mines Ltd	156,320		156,320	79,476	12,240	1,200	(c)
<i>Larder Lake District</i>							
Chesterville Larder Lake Gold Mining Ltd.	153,416		153,416	16,912	1,091	700	(c)
Kerr-Addison Gold Mines Ltd	429,367		430,065	79,391	4,531	1,800	(c)
Omega Gold Mines Ltd.	104,724		104,724	11,626	1,638	500	(c)
<i>Matachewan District</i>							
Hollinger Cons. Gold Mines Ltd. (Young-Davidson)	206,511		206,558	19,494	4,185	1,050	(c)
Matachewan Consolidated Mines Ltd.	161,311		161,361	15,438	5,472	1,000	(c)
<i>Thunder Bay District</i>							
Hard Rock Gold Mines Ltd.	6,337		6,337	1,338	107	450	(c)
Leitch Gold Mines Ltd.	22,350	2,200	20,089	17,729	623	90	(a) (c)
Little Long Lac Gold Mines Ltd.	86,005	13,888	72,117	21,153	1,976	300	(a) (c)
MacLeod-Cockshutt Gold Mines Ltd.	41,945	11,645	30,000	9,551	158	650	(c)
<i>Patricia District</i>							
Berens River Mines Ltd.	72,880		72,880	17,805	684,134	225	(e)
Central Patricia Gold Mines Ltd.	89,301		89,301	27,797	2,640	400	(c)
Cochénoir Willans Gold Mines Ltd.	31,672		31,445	9,139 (h)	363	200	(a) (c)
Hasaga Gold Mines Ltd.	124,338	19,595	105,068	11,735	4,868	350	(c)
Madsen Red Lake Gold Mines Ltd.	101,663		101,663	25,959	5,590	400	(c)
McKenzie Red Lake Gold Mines Ltd.	76,296	12,836	63,460	12,761	3,154	250	(c)
Pickle Crow Gold Mines Ltd.	64,170	3,863	60,227	33,489	4,673	400	(a) (c)
Total Principal Gold Mines	6,357,134	81,503	6,277,438	1,531,434	972,197	29,685	
Nickel-copper and other mines				93,034			
Total Ontario				1,625,368			
MANITOBA—							
San Antonio Gold Mines Ltd.	136,217		136,977	38,326	6,035	550	(a) (c)
Copper-gold-silver ores				32,329			
Total Manitoba				70,655			
SASKATCHEWAN—							
Copper-gold-silver and alluvial ores				108,568			
ALBERTA—							
Placer gold				7			
BRITISH COLUMBIA—							
Bralorne Mines Ltd.	110,410	5,127	105,283	48,286	9,900	550	(c) (b)
Cariboo Gold Quartz Mining Co. Ltd.	36,016		34,676	13,431	1,116	350	(c) (i)
Hedley Mascot Gold Mines Ltd.	56,481		56,503	1,363	242	225	(c) (j)
Island Mountain Mines Co. Ltd.	22,614		22,614	10,071	1,376	150	(c)
Kelowna Exploration Co. Ltd.	99,383		99,383	34,582	1,464	275	(k)
Pioneer Gold Mines of B.C. Ltd.	10,528	1,392	9,039	4,944	941	300	(c)

For footnotes, see end of table, p. 44.

Table 35.—Production of Gold and Silver in Canada by Principal Mines, 1945—Concluded

Property and Province	Ore hoisted	Material sorted (discarded)	Ore treated	Gold produced	Silver produced	Mill capacity 24 hours	See footnotes
	tons	tons	tons	fine oz.	fine oz.	tons	
Sheep Creek Gold Mines Ltd.	24,504	.....	13,470	9,925	2,712	150	(c)
Silbak Premier Mines Ltd.	65,801	.....	55,801	14,464	83,598	500	(l)
Total Principal Gold Mines	425,737	6,519	406,769	137,066	101,409	2,500	.....
Material exported	.....	.....	.....	24,468	.....	.....	.....
Placer gold	.....	.....	.....	10,071	.....	.....	.....
Copper-gold and other ores	.....	.....	.....	15,240	.....	.....	.....
Total British Columbia	.....	.....	.....	186,854	.....	.....	.....
YUKON—Placers	.....	.....	.....	31,721	6,282	.....	.....
NORTHWEST TERRITORIES—Negus Mines Ltd.	11,454	1,415	10,039	8,655	2,033	.....	(a) (c)
Total Canada	.....	.....	.....	2,696,727	.....	.....	.....

(a) Amalgamation.

(b) Concentrates shipped to smelter—additional gold, 9,078 oz; silver, 5,787 oz.

(c) Cyanidation.

(d) Hoisted and stock-piled.

(e) Ore shipped to smelter.

(f) Copper-gold concentrates shipped to smelter—13,643 oz. gold; 5,292 oz. silver—included in Copper-gold and other ores.

(g) Crude arsenic also shipped.

(h) Includes 2,433 oz. gold in ore shipped to smelter.

(i) Slag and residues to smelter included in B.C. total—gold 45 oz., silver 16 oz.

(j) Concentrates exported—gold 15,345 oz., silver 3,695 oz.

(k) Concentrates exported—gold 34,582 oz., silver 1,464 oz.

(l) Exported material containing gold 14,464 oz., silver 83,598 oz.

(m) Receipts at Royal Canadian Mint, Ottawa.

Table 36.—Production of New Gold* by Provinces and Territories, 1932-1945

Year	Nova Scotia		Quebec		Ontario		Manitoba	
	Fine ounces	\$	Fine ounces	\$	Fine ounces	\$	Fine ounces	\$
1932	964	22,634	401,105	9,417,572	2,280,105	53,534,743	122,507	2,876,350
1933	1,382	39,525	382,886	10,950,539	2,155,519	61,647,843	125,310	3,583,886
1934	3,525	121,613	390,097	13,458,347	2,105,339	72,634,195	132,321	4,565,075
1935	9,376	329,942	470,552	16,558,725	2,220,336	78,133,624	142,613	5,018,551
1936	11,960	418,959	666,905	23,361,683	2,378,503	83,818,960	139,273	4,878,733
1937	19,918	696,931	711,480	24,804,685	2,587,095	90,522,454	157,949	5,526,636
1938	26,560	934,248	881,263	30,998,426	2,896,477	101,883,578	185,706	6,532,209
1939	29,943	1,082,170	953,377	34,455,998	3,086,076	111,533,873	180,875	6,537,003
1940	22,219	855,432	1,019,175	39,238,238	3,261,698	125,574,988	152,295	5,883,357
1941	19,170	738,045	1,089,339	41,939,552	3,194,308	122,980,858	150,553	5,796,290
1942	12,989	500,076	1,092,388	42,056,938	2,763,819	106,407,032	136,226	5,244,701
1943	4,129	158,967	922,533	35,517,521	2,117,215	81,512,777	91,775	3,533,337
1944	5,840	224,840	746,784	28,751,184	1,731,836	66,675,686	74,168	2,855,468
1945	3,291	126,704	661,608	25,471,908	1,625,368	62,576,668	70,655	2,720,21
Total	171,266	6,250,636	10,389,492	377,071,316	34,403,694	1,219,937,299	1,862,226	65,531,794
Year	Saskatchewan		British Columbia		Yukon		Northwest Territories	
	Fine ounces	\$	Fine ounces	\$	Fine ounces	\$	Fine ounces	\$
1932	11	258	199,004	4,672,429	40,608	953,438	.....	.....
1933	5,400	154,440	238,995	6,835,257	39,493	1,129,500	.....	.....
1934	5,405	186,472	296,196	10,218,762	38,798	1,338,531	.....	.....
1935	14,323	504,026	391,633	13,781,565	35,707	1,256,529	200	7,038
1936	48,981	1,715,805	451,938	15,831,388	50,358	1,764,041	1	35
1937	65,886	2,305,351	505,857	17,699,936	47,982	1,678,890	.....	.....
1938	50,021	1,759,489	605,617	21,302,578	72,368	2,545,544	6,800	239,190
1939	77,120	2,787,194	626,970	22,659,323	87,745	3,171,192	51,914	1,876,224
1940	102,925	3,962,613	617,011	23,754,924	80,458	3,097,633	55,159	2,123,621
1941	138,015	5,313,578	608,203	23,415,816	70,959	2,731,922	74,417	2,865,054
1942	178,871	6,886,533	474,339	18,262,052	83,246	3,204,971	99,394	3,826,669
1943	174,090	6,702,465	241,346	9,291,821	41,160	1,584,660	59,032	2,272,732
1944	122,782	4,727,107	199,857	7,578,994	23,818	916,691	20,775	799,838
1945	108,568	4,179,868	186,864	7,193,879	31,721	1,221,258	8,655	333,218
Total	1,092,398	41,185,199	5,640,820	202,498,724	744,421	26,595,102	376,347	14,343,619

(*) From all sources.

Table 37.—Gold Recovered in Canada According to Nature of Ore, by Provinces, 1941-1945

Year and Province	Placer gold	Auriferous quartz ores (†)	Copper-gold-silver ores	Nickel copper ores	Silver-lead and other ores	Total
	oz.	oz.	oz.	oz.	oz.	oz.
1941						
Nova Scotia.....		19,170				19,170
Quebec.....	9	813,158	276,172			1,089,339
Ontario.....		3,116,303		77,960	45	3,194,308
Manitoba.....		80,330	70,223			150,553
Saskatchewan.....	57	24,631	113,327			138,015
Alberta.....	215					215
British Columbia.....	35,020	516,941	35,010		21,232	608,203
Northwest Territories.....	39	74,378				74,417
Yukon.....	70,847				112	70,959
Total Canada.....	106,187	4,644,911	494,732	77,960	21,389	5,345,179
1942						
Nova Scotia.....		12,989				12,989
Quebec.....		811,714	280,580		94	1,092,388
Ontario.....		2,692,828		70,861	130	2,763,819
Manitoba.....		85,193	51,033			136,226
Saskatchewan.....	9	15,141	163,721			178,871
Alberta.....	34					34
British Columbia.....	26,323	418,048	19,892		10,076	474,339
Northwest Territories.....		99,394				99,394
Yukon.....	83,198				48	83,246
Total Canada.....	109,564	4,135,307	515,226	70,861	10,348	4,841,306
1943						
Nova Scotia.....		4,129				4,129
Quebec.....		625,429	284,112		(*) 12,992	922,533
Ontario.....		2,061,376		55,776	62	2,117,215
Manitoba.....		62,254	29,521			91,775
Saskatchewan.....		4	174,086			174,090
Alberta.....	21					21
British Columbia.....	11,680	205,850	18,137		5,079	241,345
Northwest Territories.....		59,032				59,032
Yukon.....	41,157				3	41,160
Total Canada.....	52,858	3,018,074	595,857	55,776	18,736	3,651,301
1944						
Nova Scotia.....		5,840				5,840
Quebec.....		522,894	209,989		(*) 13,901	746,784
Ontario.....		1,676,486		55,286	64	1,731,836
Manitoba.....		40,669	33,499			74,168
Saskatchewan.....	5		122,777			122,782
Alberta.....	51					51
British Columbia.....	9,402	169,132	14,852		3,471	196,857
Northwest Territories.....		20,775				20,775
Yukon.....	23,816				2	23,818
Total Canada.....	33,274	2,435,796	381,117	55,286	17,438	2,922,911
1945						
Nova Scotia.....		3,291				3,291
Quebec.....		434,784	212,146		(*) 14,678	661,608
Ontario.....		1,532,715	44,544	48,109		1,625,368
Manitoba.....		38,326	32,329			70,655
Saskatchewan.....			108,568			108,568
Alberta.....	7					7
British Columbia.....	10,071	161,960	12,453		2,370	186,854
Northwest Territories.....		8,655				8,655
Yukon.....	31,721					31,721
Total Canada.....	41,799	2,179,731	410,040	48,109	17,048	2,696,727

(*) Contains a relatively small quantity of gold recovered from certain complex ores (lead, copper, etc.) which are difficult to classify.

(†) Includes production of Golden Manitou mine which was classified prior to 1943 as auriferous quartz.

Table 38.—Canadian Gold Production According to Method of Computation and Recovery, 1932-1945

Year	In alluvial gold	In crude gold bullion produced at mines (a)	In base bullion produced at lead smelters	In blister and anode copper produced (b)	In ores matte, slags, etc., exported	Total Gold Produced
	%	%	%	%	%	fine oz.
1932.....	1.8	79.3	1.0	15.1	2.8	3,044,357
1933.....	2.0	79.8	0.7	14.2	3.3	2,949,309
1934.....	2.0	78.7	1.1	13.4	4.8	2,972,074
1935.....	1.8	78.3	2.2	13.2	3.9	3,254,890
1936.....	2.2	77.4	1.6	13.8	5.0	3,748,028
1937.....	2.2	80.2	0.9	11.7	5.0	4,096,213
1938.....	2.5	80.8	0.9	11.2	4.5	4,725,117
1939.....	2.5	82.1	0.6	10.4	4.4	5,094,379
1940.....	2.1	82.7	0.6	10.0	4.6	5,311,145
1941.....	2.0	82.6	0.4	10.3	4.7	5,345,179
1942.....	2.3	80.8	0.2	12.1	4.6	4,841,306
1943.....	1.45	78.71	0.19	15.61	4.04	3,651,301
1944.....	1.14	78.98	0.12	15.41	4.35	2,922,911
1945.....	1.55	76.77	0.09	15.30	6.29	2,696,727

(a) Includes a relatively small quantity of gold contained in shipments of gold ores, slags, etc., to Canadian smelters.

(b) Canadian blister copper is sometimes refined in the United States; also contains a relatively small quantity of gold recovered from auriferous quartz ores.

Table 39.—Production of Gold in Canada, by Months(x), 1943-1945 (Fine Ounces)

Month	1943	1944	1945	Month	1943	1944	1945
January.....	334,422	258,607	237,210	July.....	292,663	236,362	213,815
February.....	327,318	257,613	215,993	August.....	293,281	237,617	215,386
March.....	347,591	267,485	232,610	September.....	282,130	237,151	215,157
April.....	323,041	245,577	227,575	October.....	279,988	230,749	233,487
May.....	313,489	257,647	221,288	November.....	267,726	223,806	224,542
June.....	326,839	240,673	215,802	December.....	262,813	229,624	243,862

(x) Compiled from monthly reports received from principal operators and the totals were adjusted to agree with the 12 months' total as compiled from final annual reports; production includes recoveries from all types of ore.

Table 40.—Precious Metals Consumed by the Jewellery and Silverware Industry In Canada, 1943 and 1944

Material	Cost at works	
	1943	1944
	\$	\$
Fine gold.....	3,138,717	3,665,017
Gold alloys.....	704,571	826,199
Fine silver.....	1,421,459	1,749,154
Silver alloys.....	837,907	1,014,775
Platinum.....	169,467	150,966
Old gold, jewellers' findings, waste and scrap for refining.....	1,828,996	1,379,536
Gold-filled wire and stock.....	269,249	349,871
Precious and semi-precious stones.....	724,011	1,252,769

Table 41.—Gold Production of the World (a)—(In fine ounces)—1939 and 1945 (Taken from American Bureau of Metal Statistics)

Country	1939	1945
North America—		
United States.....	5,559,139	996,502
Canada.....	5,094,379	2,651,250
Mexico.....	841,623	499,290
Newfoundland.....	20,313	15,354
Total North America.....	11,515,454	4,162,396
CENTRAL AMERICA AND WEST INDIES.....	176,000	285,000
SOUTH AMERICA—		
Brazil.....	233,800	195,000
Chile.....	329,444	179,551
Colombia.....	570,017	506,695
Ecuador.....	85,352	69,402
Peru.....	272,362	175,000
Guiana—British.....	38,473	22,533
Dutch.....	12,000	7,500
French.....	37,606	20,640
Venezuela.....	146,607	57,700
Other South America.....	50,000	20,000
Total South America.....	1,775,661	1,254,021
EUROPE—		
Czechoslovakia.....	10,000	
France.....	66,647	
Yugoslavia.....	71,503	
Roumania.....	153,616	
Russia and Siberia.....		
Sweden.....	216,144	95,000
OCEANIA—		
New South Wales.....	87,188	40,000
Queensland.....	147,248	60,000
Victoria.....	156,522	61,790
Western Australia.....	1,214,237	468,548
Tasmania.....	19,982	13,050
New Guinea.....	246,214	
New Zealand.....	178,955	
Fiji.....	110,000	
Other Oceania (c).....	48,684	
ASIA—BRITISH INDIA.....	316,504	170,000
AFRICA—		
Belgian Congo.....	521,666	343,447
French West Africa.....	53,868	65,600
Kenya.....	77,444	45,000
Madagascar.....	14,000	6,430
Rhodesia.....	800,255	570,000
British West Africa (b).....	839,900	565,000
Tanganyika.....	130,366	72,530
Transvaal, Cape Colony and Natal.....	12,821,507	12,213,545
Totals for World.....	39,490,000	26,590,000

(a) In compiling this table free use has been made of the reports of the United States Director of the Mint. Production of the Philippine Islands is included with the United States in this table.

(b) Comprising Gold Coast, Sierra Leone and Nigeria.

(c) Includes Papua.

NOTE.—In the absence of data from Russia and Siberia and from Korea, Japan and other countries omitted from the above table conjectural insertions have been 5,000,000 oz. for Russia and Siberia in 1939 and 4,000,000 oz. in 1945. The hypothetical insertion for Korea, Japan, etc., has been 2,500,000 oz. for 1939 and 1,300,000 oz. for 1945. World's totals as reported in above table are subject to correction if, when and as, the true figures for the missing gold productions become known.

Table 42.—Comparative Figures of Gold Production for the World Since the Discovery of America, also Production for Russia, Transvaal, United States and Canada

Year	Russia (a)	Transvaal since the commence- ment of Fields (i)	United States (f) (a)	Canada since the recording of production in 1858	(a) World since the discovery of America
	fine ounces	fine ounces	fine ounces	fine ounces	fine ounces
1493-1600.....					24,266,820
1601-1700.....					29,330,455
1701-1800.....					61,088,215
1801-1840.....					20,488,552
1841-1850.....			(c) 1,187,170		17,605,018
1851-1860.....				220,039	64,482,933
1861-1870.....			(d) 58,279,778	1,477,999	61,098,343
1871-1880.....			(e) 15,281,264	904,093	55,670,618
1881-1890.....		1,070,651	15,808,339	584,102	51,280,184
1891-1895.....		6,870,158	9,106,834	291,564	39,412,823
1896-1900.....		12,578,869	15,728,572	3,469,791	62,234,698
1901-1905.....		13,632,908	19,393,722	4,592,261	78,033,650
1906.....		5,792,823		556,415	19,471,080
1907.....		6,450,740		405,517	19,977,260
1908.....		7,056,266	22,993,218	476,112	21,422,244
1909.....		7,295,108		453,865	21,965,111
1910.....		7,527,108		493,707	22,022,180
1911.....		8,249,461	4,687,033	473,159	22,397,136
1912.....	(g)	9,107,512	4,520,719	611,885	22,605,068
1913.....	1,583,677	8,798,336	4,299,784	802,973	22,556,347
1914.....	1,733,914	8,394,322	4,572,976	773,178	21,652,883
1915.....	1,382,450	9,093,902	4,887,604	918,056	22,846,608
1916.....	1,089,885	9,296,618	4,479,057	930,492	22,032,542
1917.....	871,265	9,018,084	4,051,440	738,831	20,346,043
1918.....	554,558	8,418,292	3,320,784	699,681	18,588,127
1919.....	173,610	8,331,294	2,918,628	766,764	17,339,679
1920.....	73,945	8,158,226	2,476,166	765,007	16,146,830
1921.....	65,907	8,128,681	2,422,006	926,329	15,997,692
1922.....	191,614	7,009,767	2,363,075	1,263,364	15,496,859
1923.....	305,425	9,148,771	2,602,632	1,233,341	17,845,349
1924.....	546,550	9,574,918	2,528,900	1,525,382	18,619,481
1925.....	632,390	9,597,573	2,411,987	1,735,735	18,673,178
1926.....	760,605	9,954,762	2,335,042	1,754,228	19,117,568
1927.....	688,492	10,122,459	2,197,125	1,852,785	19,058,736
1928.....	385,800	10,354,157	2,233,251	1,890,592	18,885,849
1929.....	707,300	10,412,326	2,208,386	1,928,308	19,207,452
1930.....	1,501,083	10,716,349	2,285,603	2,102,068	20,903,736
1931.....	1,655,725	10,877,708	2,395,878	2,693,892	22,284,290
1932.....	1,938,000	11,557,858	2,449,032	3,044,387	24,098,676
1933.....	2,700,000	11,012,340	2,556,246	2,949,300	25,400,295
1934.....	3,858,000	10,479,194	3,091,183	2,972,074	27,372,374
1935.....	4,784,030	10,773,041	3,609,283	3,284,890	29,999,245
1936.....	(h) 6,500,000	11,335,092	4,357,394	3,748,028	32,930,554
1937.....	(h) 5,900,000	11,734,553	4,804,540	4,096,213	35,118,298
1938.....	(h) 5,800,000	12,161,375	5,089,811	4,725,117	37,703,334
1939.....	(h) 5,000,000	12,821,061	5,611,171	5,094,379	39,534,420
1940.....	(h) 4,000,000	14,037,741	(j) 6,003,105	5,311,145	41,067,101
1941.....	(b)	14,386,361	(l) 5,976,419	5,345,179	(k) 40,332,204
1942.....	(b)	14,120,617	(n) 3,741,806	4,841,306	(m) 36,000,000
1943.....	(b)	12,800,021	(q) 1,394,522	3,651,301	(o)
1944.....	(b)	12,277,228	(p) 1,002,238	2,922,911	(o)
1945.....	(b)	12,213,545	(p) 996,502	2,696,727	(o)
Total.....		432,741,986	274,530,097	(r) 94,944,481	

(a) Supplied by United States Mint.

(b) Not available.

(c) 1792-1847.

(d) 1848-1872.

(e) 1873-1880.

(f) Including Philippine Islands production received in United States. Data represent receipts at United States Mint's refineries assay offices.

(g) Data not available for preceding years. A revision by the United States Mint of estimated Russian gold production for the years 1913 to 1934 was made from United States consular reports, based principally on Soviet publications. While available data are quite indefinite and in many instances, contradictory, it is believed that this revision more nearly represents actual production than data heretofore used. Figures for Russian production since 1937 supplied by American Bureau of Metal Statistics.

(h) Subject to revision. American Bureau of Metal Statistics.

(i) Annual Report—Department of Mines, Union of South Africa. 1941 to 1944 figures, Transvaal Chamber of Mines.

(j) Includes 1,140,126 fine ounces received from Philippines.

(k) Includes conjectural data for Russia.

(l) Includes 1,144,332 fine ounces from Philippine Islands.

(m) The Mining Journal, London—subject to revision.

(n) Includes 158,726 ounces received from Philippine Islands.

(o) Omitted due to incomplete data.

(p) American Bureau of Metal Statistics—preliminary.

(q) Includes 13,764 ounces received from Philippine Islands.

(r) The total value of Canadian gold production from 1858-1945 inclusive totalled \$2,788,211,971.

Table 43.—Estimated Average Monthly Value of an Ounce of Fine Gold, Expressed in Canadian Funds, 1931-1945

Month	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940-1945
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
January.....	20.71	24.24	23.64	33.05	34.95	35.06	35.01	34.99	35.30	38.50
February.....	20.67	23.67	24.74	35.29	35.05	35.18	35.01	35.00	35.19	38.50
March.....	20.67	23.11	24.78	35.08	35.40	35.11	34.98	35.05	35.13	38.50
April.....	20.68	22.98	25.33	34.93	35.18	35.13	34.95	35.15	35.15	38.50
May.....	20.68	23.38	27.75	34.94	34.95	35.00	34.94	35.22	35.13	38.50
June.....	20.73	23.83	28.24	34.73	35.05	35.09	35.02	35.36	35.07	38.50
July.....	20.74	23.73	30.58	34.59	35.08	34.91	35.05	35.24	35.06	38.50
August.....	20.73	23.61	30.09	34.19	35.09	35.00	35.00	35.12	35.01	38.50
September.....	21.55	22.88	31.79	34.18	35.28	34.99	35.00	35.12	37.21	38.50
October.....	23.22	22.65	31.48	34.27	35.49	34.99	34.99	35.32	38.43	38.50
November.....	23.22	23.73	32.68	34.16	35.37	34.95	34.98	35.25	38.50	38.50
December.....	25.01	23.85	32.14	34.57	35.33	34.98	34.93	35.28	38.50	38.50
Yearly Average.....	21.55	23.47	28.60	34.50	35.19	35.03	34.99	35.17	36.14	38.50

NOTE.—Procedure regarding the marketing of gold by the Department of Finance, Ottawa, is noted elsewhere in this report. At December 31, 1944 the price paid by the United States Treasury for gold purchased by the Mints continued at \$35 per troy ounce of fine gold, less $\frac{1}{4}$ of 1 per cent. Actual payment by the United States Treasury for gold in imported and domestic ore or concentrate was at 99.75 per cent of the price quoted by the Treasury, which, at the close of 1944, was equal to \$34.9125 per ounce. The United States Senate Banking and Currency Committee, on March 14, 1945, rejected a proposal to increase the price of gold from \$35 an ounce to \$56. The Committee voted to reduce to 25 per cent the gold reserve requirements against Federal Reserve Bank deposits and notes.

Table 44.—World's Monetary Stocks of Gold at the Close of 1942, 1943 and 1944
(Subject to Revision)

(Compiled by the United States Mint from available data: Stated in United States money)

Country	Total Gold Stock Value, 1942 (e)	Per capita	Total Gold Stock Value, 1943 (e)	Per capita	Total Gold Stock Value, 1944 (e)	Per capita
	\$	\$	\$	\$	\$	\$
United States (d).....	22,726,255,000	168.85	21,937,794,000	159.65	20,618,830,000	148.65
Canada (f).....	5,629,000	0.49	5,346,000	0.46	6,485,000	.54
Mexico.....	39,000,000	1.95	203,000,000	9.60	222,000,000	10.49
Argentina.....	353,728,000	25.89	939,000,000	68.50	1,111,083,000	7.86
Brazil.....	115,140,000	2.66	254,563,000	5.89	329,999,000	7.28
Belgium.....	735,000,000	89.02	734,000,000	88.89	732,281,000	88.69
Denmark.....	44,000,000	11.39	44,000,000	11.39	44,009,000	11.39
France.....	2,000,000,000	47.64	2,000,000,000	47.37	1,776,570,000	42.32
Germany.....	29,000,000	0.42	29,000,000	0.42	28,542,000	.41
Great Britain.....	1,000,000	0.02	4,665,000	0.10	975,000	.....
Italy.....	(a)	(a)	(a)	(a)	(a)	(a)
Netherlands.....	506,000,000	56.71	500,000,000	56.03	500,000,000	56.03
Norway.....	(a)	(a)	(a)	(a)	(a)	(a)
Portugal.....	59,000,000	7.60	60,000,000	7.73	60,000,000	7.73
Roumania.....	241,000,000	12.09	316,000,000	15.85	368,705,000	18.50
Russia (Soviet Union).....	(a)	(a)	(a)	(a)	(a)	(a)
Spain.....	42,000,000	1.60	91,000,000	(a)	104,683,000	3.99
Sweden.....	335,000,000	52.58	387,000,000	60.74	462,518,000	72.60
Switzerland.....	824,000,000	193.56	964,000,000	226.45	1,052,453,000	247.23
British India (ex. Burma).....	274,392,000	0.71	274,392,000	0.71	274,480,000	.71
Japan (including Chosen, Taiwan, Kwantung).....	(a)	(a)	(a)	(a)	(a)	(a)
Netherlands East Indies.....	(a)	(a)	(a)	(a)	(a)	(a)
Egypt and Anglo Egyptian Sudan.....	112,208,000	4.85	112,208,000	4.85	112,208,000	4.70
Australia.....	(a)	(a)	1,953,000	0.27	(a)	(a)
New Zealand.....	23,087,000	14.13	23,087,000	14.13	23,087,000	14.06
Union of South Africa.....	634,457,000	60.30	710,360,000	67.51	812,127,000	72.97
Other countries.....	(a)	(a)	(a)	(a)	(a)	(a)
Total.....	(c)	(c)	(c)	(c)	(c)	(c)

(a) Complete data omitted because of indefiniteness or unavailability.

(b) Population figures are principally supplied by United States Department of Commerce.

(c) Totals omitted due to the great number of instances in which data are not available.

(d) Includes Alaska, Hawaii and Puerto Rico.

(e) 1 ounce fine gold = \$35.

(f) Exclusive of gold held by Foreign Exchange Control Board.

NOTE: It is understood that material amounts of gold are not reported by several countries, such as amounts held in secret funds for stabilizing currencies and those hoarded or held outside of regularly reported stocks.

Table 45.—Average Commercial Ratio of Silver to Gold for each Specified Year Since 1700

(Supplied by United States Mint)

Year		Year		Year	
1700.....	14.81	1905.....	33.87	1936.....	77.09
1750.....	14.55	1910.....	33.22	1937.....	77.44
1800.....	15.68	1915.....	40.48	1938.....	80.39
1850.....	15.70	1920.....	20.28	1939.....	88.84
1875.....	16.64	1925.....	29.78	1940.....	99.76
1880.....	18.05	1930.....	53.74	1941.....	99.73
1885.....	19.41	1932.....	73.29	1942.....	90.57
1890.....	19.75	1933.....	59.06	1943.....	77.67
1895.....	31.60	1934.....	72.49	1944.....	77.67
1900.....	33.33	1935.....	54.19		

ROYAL CANADIAN MINT

The Ottawa Mint, established as a branch of the Royal Mint under the (Imperial) Coinage Act, 1870, and opened up on January 2, 1908, was by 21-22 Geo. V, C. 48, constituted a branch of the Department of Finance and since December 1, 1931, has operated as the Royal Canadian Mint. The great development of the gold mining industry in Canada has resulted in gold refining becoming one of the principal activities of the Mint. Gold coins have never been a popular medium of exchange in Canada and have not been struck since 1919, most of the fine gold produced from the rough shipments from the mines being delivered to the Bank of Canada in the form of bars, the rest being sold in convenient form to manufacturers.

The domestic gold currency of Canada, as at present authorized by the Currency Act, consists of \$20, \$10, \$5 and \$2½ gold pieces, 900 millesimal fineness (only \$10 and \$5 have been issued). Gold was used only to an insignificant extent as a circulating medium in Canada, its monetary use being practically confined to reserves; \$5 and \$10 gold pieces weighing respectively 129 and 258 grains, 9/10ths pure gold by weight, have been coined, the Canadian gold dollar thus containing 23.22 grains of pure gold. The \$5, \$10 and \$20 gold coins of the United States, which contain exactly the same weight of gold as Canadian gold coins of these denominations, are legal tender for their face value only, as are the British sovereigns, which are legal tender for \$4.86 2/3, their equivalent in Canadian gold dollars.

The regulations in part for the receipt of gold bullion at the Royal Canadian Mint, Ottawa, are as follows: Each parcel of bullion for which a separate assay is required shall be regarded as a separate deposit, and no ingot exceeding 1,500 ounces troy, gross weight, will be accepted. All deposits shall be dealt with in the order in which they are received. Deposits containing, by assay, less than 200 parts of gold in 1,000 or appearing, either before or after melting and assaying, to be unsuitable for treatment by the refining process in use, may be rejected. A deposit so rejected shall be returned to the depositor on payment by him of any costs incurred for melting and assaying.

The Mint charges, to be calculated on the gross weight of the deposit after melting, shall be as follows:

(a) For melting and assaying—one dollar for the first four hundred ounces or part thereof and twenty-five cents for each additional one hundred ounces or part thereof.

(b) For refining—When the deposit contains not more than 5 per cent base metal, 3 cents the ounce.

Over 5 per cent but not over 10 per cent base metal 3½ cents the ounce.

Over 10 per cent but not over 15 per cent base metal, 4½ cents the ounce.

Over 15 per cent but not over 20 per cent base metal, 5 cents the ounce.

On deposits which contain over 20 per cent base metal, or which require other treatment, a charge not exceeding 10 cents the ounce, to be determined by the cost of the treatment.

The minimum charge for refining shall be two dollars for each deposit and the charge for refining shall apply to all deposits containing by assay less than 995 parts fine gold in 1,000.

A handling charge at the rate of 20 cents the ounce fine, to cover costs of realization in a market outside Canada, shall be made on all newly-mined Canadian gold deposited with the Mint, and this charge shall be increased to \$1.00 the ounce fine on all other gold accepted as a deposit. The charges under this paragraph are in addition to the Mint charges payable under Clause 5 of the Mint Regulations and are effective on and after July 27, 1946.

The gross value of gold deposited for sale with the Royal Canadian Mint or the Dominion of Canada Assay Office, Vancouver, shall be the market price of gold in the country to which the Government is at the time of the receipt of the deposit exporting gold, converted into Canadian funds at the average of the buying rates of exchange of that country reported to the Department of Finance by the Bank of Canada at 11 a.m. daily during the week in which the gold is deposited with the Mint or Assay Office.

In addition to newly mined Canadian gold there may be accepted at the Mint, gold (over 1 ounce troy fine) in the following forms: old jewellery and dental scrap, provided it has not been melted or otherwise treated in any way to prevent its origin being readily recognized; scrap from manufacturers and refiners the result of processes carried out by them in the ordinary course of their business; gold coin which, when of full weight and fineness, is not legal tender in Canada. Satisfactory evidence as to the origin of the gold shall be furnished by the depositor if required.

Delivery of deposits shall be accepted at the Mint counter only, free of all charges, and when bullion is forwarded by mail or express the original packages will not ordinarily be opened until an invoice of the description and weight of their several contents has been received. When there is a serious discrepancy between the actual and the invoice weights of any deposit, further action in regard to it will be deferred pending communication with depositor.

The gross value of a deposit shall be calculated at a rate of one dollar for each 23.22 grains fine gold contained therein (equivalent to \$20.6718+ the ounce fine) and at a rate for all silver in excess of one per centum of the weight of the deposit after melting to be determined by the Minister of Finance. The rate to be paid, under Clause 4 of the Regulations, for silver in excess of one per centum of the weight of deposits received in any week, shall average for that week of the official New York daily quotation for fine silver, from Monday to Friday, inclusive, converted into Canadian funds at the average of the Foreign Exchange Control Board's buying rate for United States funds. This Instruction shall become effective for the week commencing Monday, December 9, 1946.

COINAGE

The issues of coin as detailed below, exceeded those of the previous year by \$83,100. Silver dollars to the value of \$38,300 were coined and issued for the first time since 1939.

A comparative statement of the value of coin issued, by denominations, for the years 1944 and 1945, is shown in the table below:—

Denomination	Coin issued in	
	1944	1945
	\$ cts.	\$ cts.
Silver Coin—		
1 dollar.....		38,300.00
50 cents.....	1,230,000.00	980,000.00
25 cents.....	1,818,000.00	1,324,000.00
10 cents.....	958,000.00	1,074,000.00
Total Silver.....	4,006,000.00	3,416,300.00
Tombac Coin—		
5 cents.....	400.00	.....
Steel Coin—		
5 cents.....	571,000.00	950,300.00
Bronze Coin—		
1 cent.....	454,600.00	748,500.00
Total.....	5,032,000.00	5,115,100.00
	Number of Pieces	
Representing.....	76,200,000	111,890,300

In addition the following coinages were executed for the Government of Newfoundland.

	Value	Number of Pieces
	\$ cts.	
Silver—10 cents.....	17,583.30	175,833
5 cents.....	10,191.40	203,828
	27,774.70	379,661

Distribution of the coin issued to the various Agencies of the Bank of Canada was as follows:

	Silver				Steel	Bronze
	dollar	50 cents	25 cents	10 cents	5 cents	1 cent
	\$	\$	\$	\$	\$	\$
Calgary.....		24,000	42,000	84,000	44,500	45,200
Charlottetown.....		2,000	20,000	10,000	4,500	4,800
Halifax.....	4,000	100,000	148,000	80,000	48,000	47,500
Montreal.....	6,000		190,000	296,000	262,000	204,000
Ottawa.....	10,300	8,000	72,000	32,000	61,800	13,300
Regina.....		122,000	122,000	66,000	44,500	51,500
St. John.....		12,000	80,000	62,000	28,500	26,000
Toronto.....	8,000	512,000	466,000	314,000	358,500	268,800
Vancouver.....	2,000	130,000		60,000	60,500	49,500
Winnipeg.....	8,000	70,000	184,000	70,000	37,500	37,900
	38,300	980,000	1,324,000	1,074,000	950,300	748,500

Worn and mutilated coin withdrawn from circulation:

	Withdrawn	Net Increase in Circulation
	\$ cts.	\$ cts.
Silver coin.....	61,522.20	3,354,777.80
Nickel coin (mutilated only).....	1,819.55	
Tombac coin—5 cents.....	292.75	
Steel coin—5 cents.....	130.00	950,170.00
Bronze coin.....	2,565.66	745,934.34

GOLD BULLION

Three thousand, four hundred and five deposits of gold bullion were received at the Mint during the year from Canadian Mining Companies, the Dominion of Canada Assay Office, Vancouver, and sundry persons. The gross weight of the deposits amounted to 3,102,991 ounces, containing by assay 2,503,417 ounces fine gold and 357,739 ounces fine silver. The receipts show a decrease as compared with the year 1944 of 548 in the number of deposits, gross weight 434,742 ounces, gold content 358,632 ounces fine and fine silver 28,252 ounces.

The net amount paid by cheque to depositors was \$93,463,407.02. In addition 8,240.056 ounces of fine gold with a statutory value of \$170,337.45 was also issued in payment of gold deposits.

Postage collected for the Postmaster General on deposits shipped by mail, postage collect, amounted to \$10,636.48.

Details of the origin of the bullion deposited at Vancouver and Ottawa are shown in the following table:

Source	Gross Weight	Fine Gold	Fine Silver
	(ounces)	(ounces)	(ounces)
From CANADIAN MINES AND REFINERIES—			
Ontario.....	1,884,507.550	1,522,989.077	208,448.33
Quebec.....	931,929.275	757,420.921	113,985.17
British Columbia.....	127,890.375	103,099.881	18,363.06
Manitoba.....	85,201.375	68,187.783	5,837.86
Yukon.....	39,812.525	31,761.859	6,286.96
Nova Scotia.....	3,495.450	3,293.552	111.75
North West Territories.....	9,850.400	7,198.706	1,644.52
Alberta and Saskatchewan.....	152.180	111.757	9.34
Total from Mines and Refineries.....	3,082,839.130	2,494,063.536	354,686.99
From JEWELLERY AND SCRAP.....	24,028.680	11,562.800	3,402.05
Grand Total.....	3,106,867.810	2,505,626.336	358,089.04

A detail of the fine gold issued in the form of trade bars to the Bank of Canada, and granulated, sweep and medals to sundry persons is shown hereunder:

	Ounces Fine
5,964 Trade Bars to Bank of Canada.....	2,385,322.055
Depositors.....	8,240.056
Sales to Manufacturers.....	96,190.551
Proof Plate.....	.500
Medals.....	7.599
Sweep.....	9,402.913
	<hr/> 2,499,163.674

This total shows a decrease of 330,591.326 ounces fine as compared with the year 1944.

DOMINION OF CANADA ASSAY OFFICE, VANCOUVER, B.C.

Manager—MR. G. N. FORD

Disbursements for the purchase of gold bullion during the year 1945 amounted to \$1,835,799.67, as against \$1,436,665.86 during the preceding year, an increase of \$399,133.81.

The following table gives particulars as to source, weights etc. of deposits:—

Source	Number of Deposits	Gross Weight Ounces	Fine Gold Ounces	Fine Silver Ounces
Yukon Territory.....	179	39,749.25	31,719.225	6,280.94
British Columbia.....	212	18,173.15	14,996.860	2,060.36
Alberta.....	3	141.68	104.205	8.67
Jewellery and Dental Scrap.....	105	3,049.23	1,310.910	573.73
1945.....	499	61,113.31	48,131.200	8,923.70
(1944).....	577	48,983.87	37,679.028	7,649.55

Although a further decrease is shown in the number of deposits during the past year, as compared with 1944, the gross weight and fine gold content show an increase.

Since 1939 there has been a decline each year in the volume of gold deposited at this office, particularly noticeable since 1943 inclusive, when priority was given to base metals required for war purposes.

With the change-over to peacetime activities, the year upon which we have just entered should show an appreciable increase in placer and lode gold production in British Columbia and of placer gold in the Yukon Territory.

The principal shipper of gold to this office for many years, the Yukon Consolidated Gold Corporation Ltd., Dawson, Y.T., operated 3 dredges during 1945, with an output of just over \$900,000.00 in value. This year the company is planning to place 6 dredges in operation, with an estimated value of production amounting to approximately \$1,500,000.00.

Other placer operators in the Territory, including Clear Creek Placers Ltd., expect quite an increased production.

THE ALLUVIAL GOLD MINING INDUSTRY, 1945

By far the major portion of alluvial gold was produced in the Yukon and British Columbia; relatively small quantities were obtained in Alberta.

In 1945 there were 41,799 troy ounces of fine gold recovered from crude gold obtained in Canadian alluvial deposits. This is an increased production of 26 per cent over the preceding year. With this exception, the placer gold obtained is the lowest recorded amount for the past fifteen years.

No placer gold mining operations were reported for 1945 from the eastern provinces, including Quebec and Ontario.

Saskatchewan and Alberta.—The small amount of gold, considered as being placer in origin, received at the Royal Canadian Mint, Ottawa, is assumed to have come from along the

North Saskatchewan River. There has been activity in this district, vicinity of Edmonton, dating from about 1860.

British Columbia.—It has been found impractical to obtain complete reports for each individual placer mining operation in British Columbia inasmuch as a considerable quantity of the crude placer gold is recovered annually by prospectors of no fixed abode who, in many instances, market their recoveries through local merchants and banks. Recoveries in 1945 were made chiefly from deposits located in the Atlin and Cariboo districts.

Table 46.—Summary Statistics of Alluvial Gold Mining in Canada, 1944 and 1945

	1944			1945		
	British Columbia	Yukon	Alberta and Saskatchewan (a)	British Columbia	Yukon	Alberta and Saskatchewan
Number of firms and individual operators (†).....	41	6	.....	33	5	.....
Number of employees.....	72	139	.....	69	165	.....
Salaries and wages paid..... \$	116,132	482,424	.....	119,714	572,969	.....
Electricity generated for own use..... K.W.H.	260,000	12,698,500	.....	260,000	11,630,900	.....
Electricity generated for sale.....	.....	5,498,700	.....	.....	5,955,900	.....
Crude gold recovered..... crude oz.	11,433	30,570	66	12,589	38,000	110
Platinum recovered..... oz.	.....	.....	.....	.....	.....	.....
Value of platinum recovered..... \$	.....	.....	.....	.....	.....	.....
Quantity of material handled..... cu. yd	531,737	4,687,174	220	263,527	2,981,599	.....
Tungsten recovered (pounds concts.)..... lb.	.....	.....	.....	.....	.....	.....
Length of ditches..... Miles (b)	47	50	.....	54	48	.....
Total gross value of alluvial products..... \$	361,977	916,877	2,271	398,591	1,224,210	3,952
Fuel and electricity used (purchased)..... \$	8,470	35,121	.....	7,948	33,556	.....
Process supplies used..... \$	7,368	6,335	.....	8,260	19,742	.....
Cost of freight and express on dust, nuggets, bullion, etc., shipped (c).....	1,140	15,787	.....	1,289	5,259	.....
Cost of smelter, refinery and mint treatment on material shipped (c).....	1,464	8,419	.....	2,507	2,187	.....
Total net value of alluvial products..... \$	343,535	851,215	2,271	378,587	1,163,466	3,952

† In addition to the number shown in the table, there were numerous small operators from whom returns were not obtainable.

(a) Represents receipts of crude gold at Dominion Assay Office, Vancouver, B.C., or Royal Canadian Mint, Ottawa.

(b) Includes flume in use.

(c) Information not completely available.

Table 47.—Alluvial Gold Recovered and Quantity of Material Handled (†), 1925-1945

Year	BRITISH COLUMBIA				YUKON				Average value gold per fine oz.
	Material handled (*)	Gold recovered	Ounces per cu. yd.	Value per cu. yd.	Material handled (*)	Gold recovered	Ounces per cu. yd.	Value per cu. yd.	
	cu. yd.	fine oz.	fine oz.	\$	cu. yd.	fine oz.	fine oz.	\$	
1925.....	(a)	13,181	(a)	.....	3,103,892	47,817	0-0154	0-318	20-67
1926.....	1,237,090	16,730	0-0135	0-279	2,501,200	25,344	0-0101	0-208	20-67
1927.....	2,470,552	7,353	0-0029	0-0599	2,421,489	30,778	0-0127	0-262	20-67
1928.....	1,188,667	6,739	0-0057	0-1178	5,097,132	34,116	0-0067	0-1355	20-67
1929.....	1,336,390	5,158	0-0039	0-0806	4,500,000	35,673	0-0079	0-1633	20-67
1930.....	224,339	7,164	0-0319	0-6593	3,559,642	35,180	0-0090	0-2046	20-67
1931.....	1,587,271	13,741	0-0086	0-1853	4,914,638	44,061	0-0090	0-1939	21-55
1932.....	1,053,677	16,320	0-0155	0-3637	6,051,256	40,373	0-0067	0-1572	23-47
1933.....	1,326,721	19,142	0-0144	0-4118	5,605,522	39,174	0-0070	0-2002	28-60
1934.....	2,034,522	20,145	0-0099	0-3415	6,315,070	38,703	0-0061	0-2104	34-50
1935.....	1,855,937	24,744	0-0133	0-4680	5,442,861	35,705	0-0066	0-2322	35-19
1936.....	1,083,934	34,711	0-0166	0-5815	8,067,150	50,192	0-0062	0-2172	35-03
1937.....	3,472,025	43,322	0-0125	0-4373	8,298,514	48,679	0-0056	0-1959	34-99
1938.....	4,138,746	46,207	0-0112	0-3939	8,870,628	71,203	0-0080	0-2813	35-17
1939.....	4,779,407	39,797	0-0083	0-2999	11,152,198	85,572	0-0077	0-2752	38-14
1940.....	6,680,457	32,128	0-0048	0-1848	11,551,170	79,905	0-0069	0-2656	38-50
1941.....	4,587,103	35,020	0-0076	0-2926	8,792,220	70,847	0-0081	0-3119	38-50
1942.....	1,884,887	26,323	0-0139	0-5352	11,875,833	(b) 83,198	0-0070	0-2695	38-50
1943.....	754,202	11,680	0-0156	0-6006	8,023,117	(b) 41,157	0-0051	0-1964	38-50
1944.....	531,737	9,402	0-0177	0-6815	4,687,174	(b) 23,816	0-0050	0-1956	38-50
1945.....	263,527	10,071	0-0382	1-4707	2,981,599	31,721	0-0106	0-4081	38-50

(†) In addition, relatively small amounts of alluvial gold have been recovered in Quebec, Saskatchewan and Alberta but complete data are not available; also, data relating to material handled, particularly those pertaining to small operations, are not complete and necessitate estimates in order to obtain totals.

(*) Data partly conjectural and include some overburden and barren material.

(a) Not available.

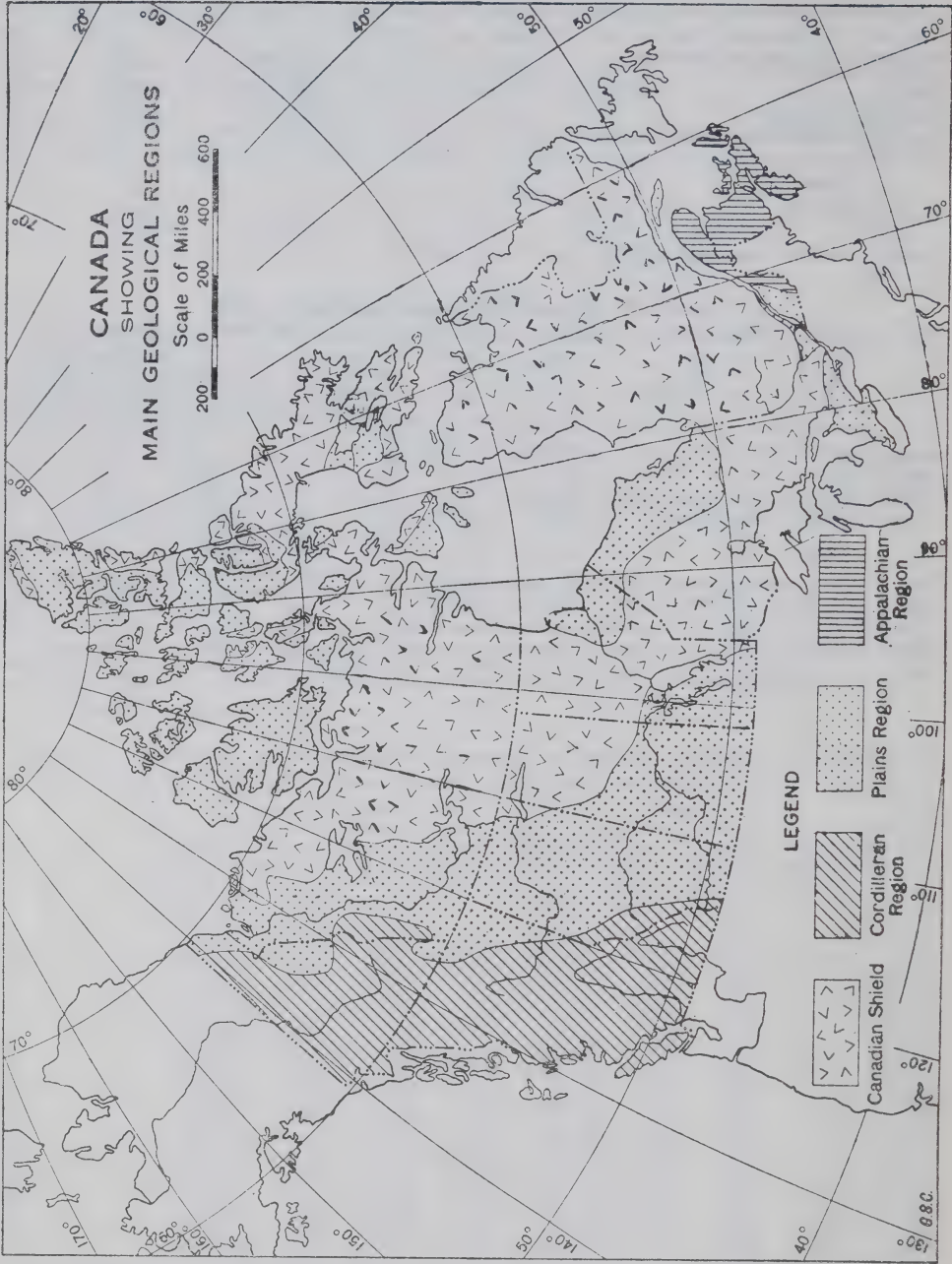
(b) Fine gold received at Royal Canadian Mint (Vancouver Assay Office); previous year's figures represent estimated fine gold in crude gold recovered.

Table 48.—Fuel and Electricity Used by the Alluvial Gold Mining Industry During 1945

Kind	Unit of measure	Quantity	Cost at Plant
			\$
Bituminous coal—from Canadian mines.....	short ton	11	821
Coke (for fuel only).....	short ton	2	226
Gasoline.....	Imp. gal.	25,130	14,678
Kerosene or coal oil.....	Imp. gal.	304	247
Fuel oil and Diesel oil.....	Imp. gal.	14,105	5,455
Wood (cords of 128 cubic feet of piled wood).....	cord	1,558	19,942
Other fuel.....			135
Total.....			41,504
Electricity generated (a) For own use.....	K.W.H.	11,890,900	.....
(b) For sale.....	K.W.H.	5,955,900	26,722

Table 49.—Power Equipment Installation, 1945

Description	Ordinarily in Use		In Reserve or Idle	
	Number of units	Total horsepower	Number of units	Total horsepower
Steam engines.....			1	15
Steam turbines.....				
Diesel engines.....	3	325	2	16
Gasoline, gas and oil engines, other than Diesel engines.....	8	94	4	42
Hydraulic turbines or water wheels.....	4	15,080		
Total.....	15	15,499	7	73
Electric motors operated by power generated by the establishment....	93	3,893	269	1,785
Stationary boilers.....	1	35	1	15
Motor-generator sets.....	9	239	1	8



THE AURIFEROUS QUARTZ MINING INDUSTRY IN CANADA

The great part of the gold of Canada comes from the Canadian Shield, an immense area of precambrian rocks extending from the Labrador Coast westward almost to the mouth of the MacKenzie River. The area of the shield is roughly 1,825,000 square miles, almost half of Canada. The deposits of the shield are of two main types, namely, quartz veins, from which most of the gold, up to the present time, has been won, and sulphide deposits which produce a smaller but very considerable proportion. The second great source of gold in Canada has been the Western or Cordilleran section, comprising British Columbia and Yukon Territory—the gold production from this section includes relatively large quantities obtained from alluvial deposits. The third principal area in which gold deposits occur is the Acadian region of Eastern Canada, the metal occurring principally in Nova Scotia where it has been mined since 1862.

Lode gold deposits like most metalliferous ore deposits are very closely linked in origin and place with geological formations of certain ages and types. In broad outline these relationships are known and easily understood, but because geological information is very incomplete for Canada—less than a fifth of Canada has been studied in any adequate manner—it is not yet possible to indicate the location of more than a part of the ground that is favourable for the occurrence of metallic ore deposits.

Geological explorations extending far beyond ground that has been geologically mapped provide general information and permits the delineation of broad features relating to ore deposition. In mapped areas much more detailed information of like type is available. Knowledge of the relationship between geology and ore deposition is of the greatest importance because it guides the search for new deposits.

Canada is divisible broadly into four large regions, each having its own characteristic stratigraphy and structure. These are from west to east: (1) the Cordilleran region embracing most of British Columbia and Yukon, (2) the Plains region forming a broad belt east of the Cordillera, (3) the Canadian Shield extending east to the St. Lawrence and (4) the Appalachian region embracing southeastern Quebec and the Maritime Provinces. A description of these regions, by George Hanson, Ph.D., Chief Geologist of the Geological Survey, Ottawa, appeared in the Dominion Bureau of Statistics' Gold Mining Report for 1943.

In 1945 mining operations were conducted at 716 auriferous quartz mines compared with 262 in 1944. The number of producing properties totalled 83 during the year under review as against 85 in the preceding year.

The gross value of output of the entire auriferous quartz mining industry, including the value of all recoverable metals, gold, silver, etc., totalled \$85,819,315 in 1945 compared with \$94,263,416 in 1944. The major producing provinces were Ontario with \$59,649,319, Quebec with \$17,974,078 and British Columbia with \$6,266,155.

Employees in the lode gold mining industry totalled 18,388 compared with 17,226 in 1944 and 7,052 in 1925. Salaries and wages paid amounted to \$37,690,177 against \$37,023,505 in the preceding year. Fuel and purchased electricity consumed by the industry in 1945 totalled \$5,400,999 and the cost of explosives, drill steel and other process supplies used amounted to \$11,101,264. A total of \$8,240,899 was paid in 1945 by operating Canadian gold mining companies in Government taxes and \$4,449,780 expended for prospecting and preliminary exploration of new areas or deposits.

BUREAU OF MINES, OTTAWA, EQUIPPED TO SERVE CANADA'S GOLD INDUSTRY

(Bureau of Mines, Ottawa, Canada)

The anticipated expansion in the industry is of special interest to the Bureau of Mines in Ottawa, for if past experience can be used as a guide, the facilities of its Ore Dressing and Extractive Metallurgy Laboratories will be used to work out treatment processes for most of the milling plants that come into operation. Prior to 1941, by far the greater part of the work in the Laboratories was on gold ores from mining areas throughout the Dominion. Gold production had been increasing steadily and for several years in succession the annual value of gold output exceeded that of all the other metals. From 20 to 30 milling plants were entering

production each year, and even though additions had been made to its facilities, the Bureau found it difficult at times to handle the many requests for test work on gold ores. To an increasing extent the ores received were refractory, containing either arsenopyrite or pyrite, and frequently such ores require roasting to liberate the gold. Even then the gold recovery is often in the neighbourhood of 90 per cent, compared with recoveries of 95 per cent or higher in the case of ores free of arsenic and pyrite.

Ores from several of the gold prospects which have been receiving active exploratory attention are known to be refractory to a varying degree and thus the experience gained by the Bureau in working out treatment methods for these types of ores will be of particular advantage. For its work on gold and other metallic ores, the Bureau has all the necessary equipment for small and large-scale tests, and the layout allows for flexibility in the devising of flow sheets. For large-scale work the equipment includes a sampling plant with a capacity of four tons an hour; two large grinding units with classifiers; three batteries of flotation machines; small ball mill units for use in grinding middlings; a gravity concentrative section with a full deck Wilfley table and three tables of quarter deck size; a pair of jigs; magnetic concentrating equipment, comprising various types of high and low intensity separators; a sink-and-float pilot plant; a precipitating unit; and a small cyanide plant with four agitators and thickeners and drum type filter and accessories. Fully equipped laboratories are also maintained for assay, chemical, microscopic and spectroscopic analyses.

Samples of ores from a few hundred pounds to 50 tons or more are accepted for investigative work, and a staff of engineers undertakes the development of the most economic method of treatment, and prepare a report detailing the results that may be anticipated and a flow sheet by which such results may be attained. The samples originate from prospectors; prospecting and mining syndicates; the mining companies that develop the properties to a stage where a milling plant is erected; consulting engineers; contractors who design and erect the plants; and operating companies who may be experiencing difficulties in their extraction methods, or who are endeavouring to improve their methods of treatment.

Conditions governing the shipment and acceptance of samples of ores, minerals and metallurgical products for examination and test are as given below.

The application should state the exact location of the property from which the sample was taken and the nature of the test work desired.

Samples should be representative of the grade and character of the ore that it is proposed to treat. According to the nature and scale of the tests desired, the size of the sample should be within the following ranges:

1. For examination and identification of the mineral constituents only—from a few pounds up to 100 pounds.
2. For examination and preliminary tests—100 pounds to 1,000 pounds.
3. For examination, preliminary tests, and for small-scale continuous tests—2 to 5 tons.
4. For large-scale continuous tests on tonnage check basis—5 tons to carload lots.

All samples under two tons in weight must be bagged and properly tagged. Two tons or over may be shipped in bulk if desired.

All transportation charges must be paid by the shipper. These charges must be prepaid, except on shipments from points where there is no Agent, in which case the Bureau of Mines will pay and will bill the shipper for the amount. No examination or test work will be made until reimbursement of such payment is made.

In addition to the transportation charges, the shipper of bulk or tonnage samples intended for analysis only, must pay a fee based on the size of the bulk sample and on the elements determined. This fee is payable in advance of submittal of the report of the analysis.

Information regarding the results of any work undertaken in the Laboratories, whether contained in a report or in related correspondence shall not be used as publicity or advertising matter for the sale of shares in any promotion.

Shipments should be addressed to "The Ore Dressing and Extractive Metallurgy Laboratories, Bureau of Mines, 552 Booth Street, Ottawa, Canada".

Co-operation of the shipper's representative and consulting engineers in doing the test work is welcomed, and in this connection it may be noted that the facilities of the Laboratories have been used at various times by several mining companies in working out some particular problem or process, using their own staff, with the guidance of the Bureau's engineers.

Although research and investigative work in ore dressing and extractive metallurgy has been left mainly with the Dominion Government, the provinces of British Columbia, Ontario, Quebec, and Nova Scotia have separately established less pretentious laboratories that have been of noticeable assistance to the mineral industries in the respective provinces. The other provinces, where mining is on a smaller scale, have no special laboratory facilities for such work, except in some respects through provincial assistance to university laboratories.

In British Columbia, the Metals and Minerals Division of the British Columbia Industrial and Scientific Research Council is carrying on the work of the British Columbia War Metals Research Board which ceased to function at the close of 1944. Its laboratory is housed in the Mining Building of the University of British Columbia and will be available to render useful service within the Province to the mineral industry.

In Ontario, the Ontario Research Foundation in Toronto does a very limited amount of ore dressing work, but does considerable work on other metallurgical problems, the Foundation is almost self-sustaining by means of service charges from industry. The Ontario Department of Mines provides an assay and mineral identification service to prospectors free of charge or at nominal cost.

The Province of Quebec provides a service through its Department of Mines to prospectors by maintaining well equipped chemical, assay, spectrographic, and mineralogical laboratories. The Province has supplied certain universities with ore dressing and metallurgical equipment. For instance, the Laval University Laboratories have been equipped with modern testing facilities.

In Nova Scotia, the Provincial Government has provided the Nova Scotia Technical College with small-scale equipment for test work in ore dressing.

The Bureau of Mines in Ottawa co-operates fully with all the provinces by supplying any information desired and by supplying the provincial departments concerned with copies of all reports on investigations on ores originating in the respective provinces.

Table 50.—Principal Statistics of the Auriferous Quartz Mining Industry in Canada, for Years Specified

	Number of active operators	(c) Number of operating plants or mines	Number of employees	Salaries and wages	Cost of fuel and electricity	(b) Cost of supplies used	Amount of freight, etc., paid on shipments of ore, slag, etc.	Smelter and refinery treatment costs	Gross value of bullion, ore, concentrates or residues shipped from mines (d)	Net value of bullion, ore, concentrates or residues shipped from mines (d)
				\$	\$	\$	\$	\$	\$	\$
1923.....	65	65	5,524	8,961,434	1,497,197		Data not available		(a) 25,021,837	Data not available
1929.....	80	85	8,660	14,258,733	2,579,481		Data not available		(a) 37,275,986	Data not available
1944—										
Nova Scotia.....	3	3	72	109,670	29,710	29,970	352	2,138	218,420	158,250
Quebec.....	144	146	4,516	9,302,580	1,557,531	2,886,898	83,946	550,613	20,179,341	15,020,353
Ontario.....	75	76	11,119	24,432,204	3,838,979	7,343,078	101,730	773,600	64,870,440	52,813,053
Manitoba.....	1	1	180	372,871	97,459	126,465	3,329	17,520	1,568,175	1,321,402
Saskatchewan.....	1	1	20	31,603	4,758	1,662				—6,457
British Columbia.....	21	23	1,241	2,532,570	308,195	585,135	182,046	253,839	6,627,114	5,298,898
Northwest Territories.....	12	12	78	221,007	60,447	102,858	1,571	8,385	799,926	626,885
Yukon.....										
Canada.....	257	262	17,226	(c) 37,023,505	5,895,117	11,174,746	373,074	1,556,095	94,263,416	75,231,381
1945—										
Nova Scotia.....	4	4	78	114,054	27,164	32,420	161	1,251	116,540	55,543
Quebec.....	367	368	4,672	9,101,570	1,523,310	2,832,764	57,793	472,904	17,974,078	13,237,217
Ontario.....	229	230	11,535	24,162,621	3,228,662	7,486,469	100,910	637,930	50,640,319	43,205,248
Manitoba.....	11	11	264	513,498	107,548	128,682	3,834	16,496	1,470,140	1,222,582
Saskatchewan.....	2	2	20	34,910	5,561					—5,561
British Columbia.....	36	38	1,476	2,837,211	388,078	787,634	185,467	268,969	6,266,155	4,638,000
Northwest Territories.....	62	62	337	802,437	120,680	83,285	887	3,498	334,074	125,924
Yukon.....	1	1	6	13,826						
Canada.....	712	716	18,388	(c) 37,690,177	5,490,999	11,101,264	348,852	1,391,138	85,819,315	67,577,062

(a) Less freight and treatment charges.

(b) Explosives, chemicals, etc.

(c) Producing mines: 1923—33; 1929—38; 1940—278; 1944—85; 1945—83.

(d) Value of bullion produced plus value of ore, concentrates, etc., shipped.

(e) Includes in salaries \$5,871,597 for 1944 and \$6,488,334 for 1945.

Table 51.—Principal Statistics Relating to Producers Only in the Auriferous Quartz Mining Industry in Canada, 1945

Province	Number of producing plants or mines	Number of employees	Salaries and wages	Cost of fuel and electricity	(a) Cost of process and supplies used	Value of freight paid on shipments of ore, slag, etc.	(b) Smelter and refinery treatment costs	Gross value of bullion, ore, concentrates or residues shipped from mines (c)	Net value of bullion, ore, concentrates or residues shipped from mines (c)
Nova Scotia.....	3	75	111,406	27,164	32,430	161	1,251	116,549	55,543
Quebec.....	18	3,606	7,738,236	1,426,473	2,537,018	57,793	472,994	17,974,078	13,479,800
Ontario.....	46	11,094	23,456,952	3,171,070	7,413,066	100,910	627,930	59,649,319	48,336,343
Manitoba.....	2	201	398,344	103,043	128,682	3,834	16,496	1,479,140	1,227,085
Saskatchewan.....									
British Columbia.....	13	1,348	2,673,174	374,129	772,364	185,467	268,969	6,266,155	4,665,226
Northwest Territories.....	1	58	178,418	57,934	70,184	687	3,498	334,074	201,771
Yukon.....									
Total Canada 1945.....	83	16,382	34,556,530	5,159,813	10,953,744	348,852	1,391,138	85,819,315	67,965,768
Total Canada 1944.....	85	16,657	36,153,991	5,850,906	11,119,240	373,074	1,586,005	94,263,416	75,334,101
Total Canada 1943.....	135	18,933	40,485,008	6,385,147	12,762,116	453,720	1,620,898	116,833,847	95,611,966
Total Canada 1942.....	184	25,814	54,033,613	7,570,656	17,880,267	741,329	2,346,264	160,564,783	132,026,267
Total Canada 1941.....	255	31,850	61,063,035	8,336,180	20,721,498	916,323	2,678,508	179,103,132	146,450,673
Total Canada 1940.....	278	30,353	53,560,938	7,935,133	20,390,784	691,649	2,486,587	178,794,078	147,289,855
Total Canada 1939.....	232	29,001	50,891,920	7,701,036	19,001,782	694,165	2,249,312	160,014,172	130,367,887

(a) Explosives, etc.

(b) Includes handling charges.

(c) Value of bullion produced plus value of ore, concentrates, etc., shipped.

Table 52.—Ores Mined and Milled, Crude Bullion Recovered and Crude Bullion and Concentrates Shipped in the Auriferous Quartz Mining Industry, 1945

	Nova Scotia	Quebec	Ontario	Manitoba	Saskat- chewan	British Columbia	Northwest Terri- tories	Yukon	Canada
Number of producing mines.....	3	18	46	2	2	13	1	1	83
Ore mined..... ton	12,554	2,837,105	6,357,340	136,217	425,885	6,519	11,454	9,750,555	
Material discarded (sorted)..... ton		45,994	82,400	6,519	1,415	417,804	10,039	136,328	
Ore milled (ground, etc.)..... ton	12,541	2,832,924	6,277,511	136,977				9,457,796	
Tailings retreated..... ton									
Gold content of ores, slags, residues and concentrates shipped—									
To foreign smelters..... fine oz.			1,695			73,699		93,937	
Canadian smelters..... fine oz.		40,280	20,238	30	564			42,569	
Bullion bars shipped—									
Gold content..... fine oz.	3,024	418,926	1,483,645	38,326	88,996		8,655	2,041,572	
Silver content..... fine oz.	102	111,659	260,857	6,036	16,347		2,033	397,030	
Bullion produced by amalgamation..... crude oz.	3,216	35,566	161,380	3,875	62,672		4,520	271,229	
Bullion produced by cyanidation..... crude oz.		558,094	1,757,489	51,803	47,067		7,290	2,431,743	
Total bullion produced..... crude oz.	3,216	593,660	1,918,869	55,678	109,739		11,810	2,692,972	
Content of bullion bars produced—									
Gold..... fine oz.	3,026	419,476	1,511,407	38,326	88,020		8,655	2,068,910	
Silver..... fine oz.	102	113,729	288,090	6,036	16,347		2,033	426,337	
Gold value (standard)..... \$	62,556	8,671,338	31,244,444	792,273	1,819,624		178,911	42,769,146	
Silver value..... \$	42	53,453	118,269	2,435	6,481		864	181,544	
Exchange premium on bullion bars produced..... \$	53,951	7,478,488	26,944,156	683,287	1,569,285		154,299	36,883,466	
Value of ores, concentrates, slags and residues sold (shipped)..... \$		1,770,799	1,342,450	1,145	2,870,765			5,985,159	
Total Gross Value of Production..... \$	116,549	17,974,078	59,649,319	1,479,140	6,266,155		334,074	85,819,315	
Value of fuel, electricity and process supplies used, also freight on shipments, marketing, smelter and refining charges..... \$	61,006	4,636,861	11,443,971	256,558	5,561	1,630,146	208,150	18,242,253	
Net Value of Production..... \$	55,543	13,337,217	48,205,348	1,222,582	-5,561	4,636,009	125,924	67,577,062	

Table 53.—Ores, Concentrates, Slags, Etc., Shipped to Smelters from Canadian Gold Mines, 1930-1945

Year	To Canadian plants						To Foreign plants					
	Ores		Concentrates		Slags, residues, precipitates		Ores		Concentrates		Slags, residues, precipitates	
	Tons	Gold content fine oz.	Tons	Gold content fine oz.	Tons	Gold content fine oz.	Tons	Gold content fine oz.	Tons	Gold content fine oz.	Tons	Gold content fine oz.
1930.....	52,540	22,910	1,187	9,665	2	117	70,497	22,432	18,276	46,102	53	1,009
1931.....	51,579	21,756	3,120	16,805	12	1,505	24,244	11,870	20,271	48,743	47	1,306
1932.....	36,337	17,943	191	952	26	1,416	36,736	15,810	16,925	52,508	30	869
1933.....	30,096	14,882	490	1,349	55	6,279	3,292	2,203	29,111	76,601	34	1,392
1934.....	48,106	29,688	2,490	10,440	203	1,487	1,419	1,936	43,053	114,476	27	599
1935.....	18,239	7,008	7,045	35,958	58	6,231	1,242	2,840	46,050	90,167	25	11,310
1936.....	4,705	6,567	7,865	34,654	64	3,609	1,864	3,421	65,660	137,273	25	16,903
1937.....	37,126	9,649	6,981	21,865	130	2,060	2,516	8,108	62,987	163,781	74	912
1938.....	172,377	36,008	8,404	25,552	37	420	4,445	8,443	40,828	142,513	1,281	23,101
1939.....	271,066	47,114	7,747	24,184	797	4,507	3,853	8,980	39,530	112,126	235	26,631
1940.....	201,941	34,315	4,485	13,532	158	3,761	7,453	8,107	44,570	125,704	103	47,160
1941.....	202,943	38,380	1,628	7,492	369	4,444	7,453	11,222	43,855	122,619	115	56,183
1942.....	280,978	38,492	2,555	7,307	137	2,831	1,356	1,020	40,428	126,931	68	55,999
1943.....	268,234	36,429	4,400	12,335	311	2,069	.....	.....	20,615	59,949	40	34,704
1944.....	205,379	26,335	4,895	11,900	143	1,858	.....	.....	20,755	54,233	73	35,955
1945.....	177,099	26,834	5,474	13,903	647	1,832	109	185	19,506	49,193	47	44,559
Grand Total.....	2,059,505	414,510	68,987	247,893	3,149	44,426	166,479	106,527	572,510	1,522,919	2,277	355,592

Table 54.—Fuel and Electricity Used by Entire Auriferous Quartz Mining Industry in Canada, by Provinces, 1945

Kind	Unit of measure	Nova Scotia		Quebec		Ontario		Manitoba	
		Quantity	Cost at plant \$	Quantity	Cost at plant \$	Quantity	Cost at plant \$	Quantity	Cost at plant \$
Bituminous coal— (a) From Canadian mines..... (b) Imported.....	short ton short ton	231	2,235	2,762 15,442	33,131 196,519	2,734 30,101	29,028 357,184	.....	.....
Anthracite coal— (a) From United States..... (b) Other.....	short ton short ton	.....	.....	82 1	1,578 24	757 3	11,392 150	.....	.....
Coke (for fuel only).....	short ton	.....	.....	12	12	.....	.....	.....	.....
Gasoline.....	Imp. gal.	2,185	704	133,304	45,972	247,525	70,162	10,589	4,885
Kerosene or coal oil.....	Imp. gal.	223	43	9,773	6,000	40,370	2,778	.....	.....
Fuel oil and diesel oil.....	Imp. gal.	3,266	386	426,817	61,569	483,116	82,778	12,405	3,243
Wood (cords of 128 cu. ft. piled wood).....	cord	.....	.....	13,162	88,869	13,242	90,022	498	3,807
Other fuel.....	.....	.....	.....	.....	.....	.....	167	.....	.....
Electricity purchased for power and lighting (including service charges).....	K.W.H.	1,492,390	23,784	183,574,639	1,096,986	479,821,690	2,563,577	11,200,000	78,420
Electricity purchased for other purposes (including service charges).....	K.W.H.	.....	.....	.....	.....	21,289,250	21,394	11,460,000	17,191
Total.....	.....	.....	27,164	.....	1,523,310	.....	3,228,662	.....	107,546
Electricity generated for own use.....	K.W.H.	.....	.....	15,561,080	.....	8,050,390	.....	.....	.....
Canada									
British Columbia									
Bituminous coal— (a) From Canadian mines..... (b) Imported.....	short ton short ton	360	4,500	3,254	46,645	2	198	9,333 45,543	115,737 533,703
Anthracite coal— (a) From United States..... (b) Other.....	short ton short ton	.....	.....	16 15	627 361	.....	.....	855 19	13,597 535
Coke (for fuel only).....	short ton	.....	.....	7	112	.....	.....	16	221
Gasoline.....	Imp. gal.	720	260	35,237	12,621	35,450	20,549	465,100	155,153
Kerosene or coal oil.....	Imp. gal.	.....	.....	1,905	476	1,955	1,067	17,226	5,026
Fuel oil and diesel oil.....	Imp. gal.	225	36	819,455	113,730	120,165	24,239	1,866,309	285,918
Wood (cords of 128 cu. ft. piled wood).....	cord	85	765	3,232	25,060	2,980	38,459	33,199	244,978
Other fuel.....	.....	.....	.....	.....	2,084	.....	.....	.....	2,251
Electricity purchased for power and lighting (including service charges).....	K.W.H.	.....	.....	23,875,610	189,360	2,306,718	36,168	672,271,047	3,985,295
Electricity purchased for other purposes (including service charges).....	K.W.H.	.....	.....	.....	.....	.....	.....	32,749,250	38,585
Total.....	.....	.....	5,561	.....	388,076	.....	120,690	.....	5,400,999
Electricity generated for own use.....	K.W.H.	.....	.....	18,001,878	.....	12,967,152	.....	54,580,500	.....
Electricity generated for sale.....	K.W.H.	.....	.....	25,000	750	2,386,144	46,493	2,411,144	47,243

Table 55.—Power Equipment (Including stand-by or emergency equipment) 1945
(Active mines only)

Description	Ordinarily in Use		In Reserve or Idle	
	Number of units	Total horse power	Number of units	Total horse power
Steam engines.....	4	132	12	2,057
Steam turbines.....	4	142	1	5
Diesel engines.....	45	9,175	37	5,807
Gasoline, gas and oil engines, other than Diesel engines.....	77	4,706	82	6,852
Hydraulic turbines or water wheels.....	13	13,882	1	780
Electric motors (except motor-generator sets)—				
(a) Operated by purchased power.....	8,468	235,331	1,378	30,903
Total.....	8,611	263,368	1,511	46,404
(b) Operated by above primary units.....	795	15,502	299	5,623
Stationary boilers.....	156	13,128	51	3,375
Motor-generator sets.....	426	18,372	29	793

Table 56.—Certain Data Relating to the Production of Gold by the Entire Auriferous Quartz Mining Industry in Canada, 1928-1945 (Averages)

Year	Ounces of gold produced per wage-earner year	Cost of fuel and electricity per ounce of gold produced	Cost of wages per ounce of gold produced	Cost of explosives and other process supplies used per ounce of gold produced	Cost of freight and smelter refinery treatment on ores and bullion shipped per ounce of gold produced	Taxes per ounce gold produced	Total of specified costs
	ounces	\$	\$	\$	\$	\$	\$
1928.....	206	1.47	7.45	Information not available	Information not available	Information not available	.....
1929.....	218	1.46	7.18	1928	1928	1928	.....
1930.....	237	1.25	6.63	to 1934	to 1936	to 1943	.....
1931 (a).....	250	1.19	6.50				.....
1932.....	255	1.21	6.31				.....
1933 (b).....	207	1.36	7.45				.....
1934 (c).....	154	1.71	9.64				.....
1935.....	146	1.89	10.48	4.38			16.75
1936.....	137	1.98	11.32	4.46			17.76
1937.....	132	2.10	12.18	4.65 (d)	0.33		19.26
1938.....	150	1.85	10.95	4.53	0.56		17.89
1939.....	157	1.81	10.69	4.45	0.67		17.62
1940.....	161	1.76	10.48	4.49	0.69		17.42
1941.....	155	1.82	11.56	4.53	0.77		18.68
1942.....	176	1.84	11.47	4.34	0.75		18.40
1943.....	176.7	2.12	11.47	4.24	0.69	4.89	23.41
1944.....	159	2.43	12.81	4.60	0.81	4.15	24.80
1945.....	140	2.45	14.08	5.09	0.74	3.74	26.10

(a) Equalization exchange premiums paid by the Dominion Government to gold miners (Great Britain goes off gold standard).

(b) United States goes off gold standard.

(c) United States gold dollar reduced in weight from 25.8 to 15 5/21 grains, 0.9 fine.

(d) Not including Mint charges and marketing prior to 1938.

NOTE.—The data contained in the foregoing table have been compiled from reports received from both producing and non-producing (exploring and developing) operators in the auriferous quartz mining industry. This fact should be noted if the information is to be construed or employed as possible criteria for technological or other statistical study. The trends revealed are not to be interpreted as entirely reflecting "Cause and effect" in the operation of producing mines *only* but rather as indices of change in the industry as a whole. For data relating to producers only, see Table 62.

Table 57.—Certain Data (Averages) Relating to the Total Production of Gold by Producers Only in the Auriferous Quartz Mining Industry in Canada, 1931, 1939-1945

Year	Ounces of gold produced per wage-earner year	Cost of fuel and electricity per ounce of gold produced	Cost of wages per ounce of gold produced	Cost of explosives and other process supplies used per ounce of gold produced	Cost of freight and smelter refinery treatment of ores and bullion shipped per ounce of gold produced	Taxes per ounce of gold produced	Total of specified costs
	ounces	\$	\$	\$	\$	\$	\$
1931.....	256	1.19	6.38	(*)	(*)	(*)	.....
1939.....	164	1.76	10.25	4.33	0.67	(*)	17.01
1940.....	165	1.72	10.20	4.41	0.69	(*)	17.02
1941.....	158	1.79	11.37	4.46	0.77	(*)	18.39
1942.....	177	1.83	11.41	4.33	0.75	(*)	18.32
1943.....	177	2.12	11.42	4.23	0.69	4.89	23.35
1944.....	163	2.41	12.59	4.57	0.81	4.12	24.50
1945.....	151	2.34	13.17	4.97	0.74	3.68	24.90

* Data not available.

Table 58.—Principal Statistics Relative to All Ontario Gold Mines, by Areas (d), 1943-1945

Camp or District	Producers	Ore (e) treated	Total gold recovered	Average ounces per ton recovered	Employees	Salaries and wages paid	Cost of fuel, electricity and process supplies
1943	No.	Tons	Fine oz.		No.	\$	\$
Poreupine.....	17	4,297,973	1,020,973	0.24	6,519	14,115,867	5,581,209
Kirkland Lake.....	9	(b) 1,114,818	466,052	0.42	2,514	5,429,511	2,435,094
Larder Lake.....	4	981,020	169,281	0.17	730	1,561,707	995,761
Matachewan.....	2	442,506	38,722	0.09	279	569,835	465,629
Sudbury.....	1	107,608	18,641	0.17	119	289,018	126,721
Algoma.....	1	1,782	254	0.14	10	14,965	5,566
Thunder Bay.....	5	(a) 438,522	141,504	0.32	919	2,011,819	1,145,151
Rainy River and Kenora.....	3	3,420	1,546	0.45	13	26,111	10,255
Patricia.....	9	681,714	203,964	0.30	1,227	2,707,544	1,348,422
Total.....	51	8,069,363	2,060,937	0.25	12,330	26,726,337	12,113,808
1944							
Poreupine.....	16	3,788,313	873,027	0.23	6,022	13,225,351	5,085,404
Kirkland Lake.....	9	1,011,225	383,167	0.38	2,346	5,129,054	2,396,345
Larder Lake.....	3	752,954	114,838	0.15	644	1,371,210	875,743
Matachewan.....	2	341,359	28,635	0.08	238	507,215	421,418
Sudbury.....	1	49	4	.....	64	157,374	74,995
Thunder Bay.....	4	(a) 305,276	100,667	0.33	695	1,576,544	943,352
Rainy River and Kenora.....	3	.....	.....	.....	3	4,233	.....
Patricia.....	8	601,441	175,657	0.29	1,107	2,481,223	1,384,795
Total.....	43	6,800,568	1,676,040	0.24	11,119	24,452,204	11,182,057
1945							
Poreupine.....	14	3,585,003	830,909	0.23	6,307	13,163,072	5,168,124
Kirkland Lake.....	10	983,724	369,992	0.32	2,400	5,073,479	2,292,892
Larder Lake.....	3	688,205	109,354	0.16	663	1,350,314	830,454
Matachewan.....	2	367,917	35,088	0.09	244	499,223	413,975
Sudbury.....	1	.....	.....	.....	72	160,025	75,670
Algoma.....	1	.....	36	.....	10	14,335	185
Thunder Bay.....	5	128,543	49,829	0.39	615	1,295,052	663,625
Rainy River and Kenora.....	2	75	29	0.39	21	52,448	4,910
Patricia.....	8	524,044	138,752	0.26	1,199	2,551,222	1,265,146
Eastern Ontario.....	.....	.....	.....	.....	4	3,451	150
Total.....	46	6,277,511	1,533,993	0.24	11,535	24,162,621	10,715,131

(a) In addition 5,887 tons tailings were retreated in 1943 and 15,732 tons in 1944.

(b) In addition 6,863 tons tailings were retreated in 1943.

(c) Mill clean-up.

(d) Includes data for all active properties.

(e) Does not include low grade discarded by sorting, but includes crude ore milled and smelted.

Table 59.—Ores Mined and Treated by Auriferous Quartz Mining Industry for Years Specified

Year	Ore hoisted	Ore milled (c)	Crude ore shipped to smelters (d)	Low grade sorted out	Tailings retreated	Gold recovered as bullion (b)	Gold in crude ore shipped	Gold in concentrates, slag, etc., shipped
	tons	tons	tons	tons	tons	fine oz.	fine oz.	fine oz.
1925.....	3,646,460	3,527,021	118,436	(a)	48,475	1,482,294	97,011	34,131
1930.....	4,472,803	4,306,869	123,037	(a)	37,095	1,782,556	45,342	56,893
1935.....	8,832,901	8,888,129	19,481	(a)	57,798	2,492,145	9,848	143,666
1936.....	10,694,208	10,504,181	6,569	(a)	33,814	2,903,063	9,988	192,439
1937.....	12,388,489	11,880,323	39,642	457,622	97,710	3,283,795	17,757	188,618
1938.....	14,749,649	14,158,555	176,822	528,696	64,926	3,810,642	44,451	191,586
1939.....	17,105,744	16,150,173	275,519	660,578	18,426	4,160,352	56,044	167,448
1940.....	18,986,306	18,083,439	209,394	757,538	180,311	4,386,673	42,422	190,157
1941.....	20,031,736	19,026,273	210,396	936,003	480,289	4,405,986	49,602 (e)	190,738
1942.....	17,722,866	16,820,442	282,334	658,439	5,176	3,898,999	39,512 (e)	193,068
1943.....	12,853,610	12,206,518	268,334	361,522	29,716	2,869,635	36,429	109,055
1944.....	10,790,495	10,330,899	205,379	234,820	18,233	2,300,090	26,535	103,946
1945.....	9,780,555	9,437,796	177,208	136,328	.....	2,068,910	27,019	109,487

(a) Not available.

(b) Content of bullion shipped 1925-1935; 1936-1945—content of bullion produced.

(c) + (d) = total crude ore treated.

(e) Gold in material shipped by gold mines to other gold mines for treatment is included under bullion.

Table 60.—Gold and Silver Content of Bullion Produced and of Ores, Concentrates, etc., Shipped, with Average Grade of Ore Shipped and Ore Milled at Auriferous Quartz Mines in Canada, with Average Price of Gold and Silver in Canadian Funds, 1929-1945

Year	Tonnage treated (c)	Gold content (b)	Silver content (b) (d)	Oz. of fine gold per ton	Oz. of fine silver per ton	Average price of gold	Average price of silver
		fine oz.	fine oz.			\$ per oz.	\$ per oz.
1929.....	4,371,143	1,771,526	2,687,873	0.41	0.61	20.67	0.530
1930.....	4,429,906	1,884,791	4,784,549	0.43	1.08	20.67	0.381
1931.....	5,526,379	2,271,278	2,725,751	0.41	0.49	21.55	0.298
1932.....	5,997,492	2,502,327	2,086,133	0.42	0.35	23.47	0.317
1933.....	6,480,164	2,455,365	1,643,793	0.38	0.25	28.60	0.378
1934.....	7,524,803	2,490,513	1,399,282	0.33	0.19	34.50	0.475
1935.....	8,907,610	2,645,659	1,439,672	0.30	0.16	35.19	0.648
1936.....	10,510,760	3,095,427	1,928,854	0.29	0.18	35.03	0.451
1937.....	(a) 11,919,965	3,490,170	1,912,286	0.29	0.16	34.99	0.449
1938.....	(a) 14,335,377	4,046,679	1,928,175	0.28	0.13	35.17	0.435
1939.....	(a) 16,425,692	4,383,844	2,119,708	0.27	0.13	36.14	0.405
1940.....	(a) 18,292,833	4,619,252	2,729,998	0.25	0.15	38.50	0.382
1941.....	(a) 19,236,669	4,646,326	2,773,460	0.24	0.14	38.50	0.383
1942.....	(a) 17,102,776	4,131,579	2,186,369	0.24	0.13	38.50	0.422
1943.....	(a) 12,474,852	3,015,119	1,399,778	0.24	0.11	38.50	0.452
1944.....	(a) 10,536,278	2,430,571	906,788	0.23	0.09	38.50	0.430
1945.....	(a) 9,615,004	2,205,416	1,205,147	0.23	0.13	38.50	0.470

(a) Material discarded by sorting not included.

(b) Relatively small quantity of gold and silver contained in concentrates, slags, etc., shipped and in cyanide solution in circuit may have originated in ores treated during the previous year; from 1937 represents metal content of total bullion produced plus metal in ores or concentrates shipped to smelters.

(c) Does not include tailings retreated, but includes ore milled plus crude ore shipped to smelters.

(d) The relatively high proportion of silver produced in 1929, 1930 and 1931, resulted chiefly from increased shipments of high silver content gold ores from the Premier and Prosperity mines in British Columbia; these mines are classified as being auriferous quartz. Prices are reported in Canadian funds.

Table 61.—Milling Capacity of Operating Canadian Gold Mines, 1935-1945 (Tons of 2,000 pounds per 24 hours)

Year	Nova Scotia	Quebec	Ontario	Manitoba	Saskatchewan	British Columbia	Northwest Territories
1935.....	292	3,368	20,921	1,465	.....	2,990	.....
1936.....	713	4,514	22,639	1,000	.....	4,120	.....
1937.....	565	6,090	25,249	975	30	3,915	.....
1938.....	542	8,217	30,097	875	1,000	4,590	.....
1939.....	562	9,580	33,324	865	1,000	4,417	.....
1940.....	450	11,215	35,030	690	1,200	4,255	275
1941.....	319	12,654	37,416	990	1,355	4,510	510
1942.....	247	14,330	36,135	908	1,202	4,303	710
1943.....	280	13,304	32,555	753	2	2,845	66
1944.....	180	13,059	30,710	550	.....	2,650	.....
1945.....	187	12,600	30,457	550	.....	2,740	417

Table 62.—Specified Costs per Ton of Ore Milled at Certain of the Principal Auriferous Quartz Mines in Canada, 1945

Name of Mine	Develop- ment and explora- tion (a)	Mining	Milling	General (b)	Total before deprecia- tion and taxes	Deprecia- tion	Taxes	Total costs
	\$	\$	\$	\$	\$	\$	\$	\$
QUEBEC								
Belleterre Quebec Mines Limited..	1-174	4-711	1-324	0-350	7-559	1-408	1-518	10-485
Canadian Malartic Gold Mines Limited.....		1-960	0-678	0-495	3-133	0-110	0-378	3-621
Francoeur Gold Mines Limited.....	0-68	2-38		2-46	5-52	0-73	0-04	6-29
Lamaque Mining Company Limited	1-08	2-27	1-02	1-35	5-72	0-19	1-74	7-65
O'Brien Gold Mines Limited.....	2-24	4-50	2-20	3-32	12-26	1-44		13-70
Perron Gold Mines, Limited.....	0-399	2-541	0-917	0-928	4-785	0-505	0-567	5-857
Senator-Rouyn Limited.....	1-64	2-27	1-09	1-33	6-33	1-57		7-90
Sigma Mines (Quebec) Limited.....	0-27	2-12	0-72	0-42	3-53	0-46	0-76	4-75
Sisocoe Gold Mines Limited.....	0-538	1-806	0-632	0-463	3-48			
Sladen-Malartic Mines Limited.....	0-53	1-69	0-99	0-43	3-64	0-46	0-03	4-13
Stadacona Rouyn Mines Limited...	1-20	1-90	0-92	0-97	4-99			
West Malartic Mines Limited.....	0-779	1-798	0-996	0-560	4-113	0-512		4-645
ONTARIO								
Porcupine District								
Aunor Gold Mines Limited.....	1-20	4-43	1-13	0-95	7-71	1-95	1-64	11-30
Bonetal Gold Mines Limited.....	0-08	2-79	1-46	0-82	5-15	0-58	0-02	5-75
Broulan Porcupine Mines Limited...	0-16	2-92	0-95	1-08	5-11	1-00	0-01	6-12
Buffalo Ankerite Gold Mines Ltd..	1-14	3-72	0-88	0-91	6-65	0-45		7-10
Coniaurum Mines Limited.....	2-01	3-00	1-18	1-00	7-19		1-46	8-65
Dome Mines Limited.....	0-746	2-056	1-025	0-793	4-62	0-056	1-553	6-229
Hollinger Cons. Gold Mines Ltd. (Timmins).....	1-030	3-384	0-722	1-004	6-140	0-367	0-787	7-294
Hollinger Cons. Gold Mines Ltd. (Ross).....	1-211	1-647	2-006	0-740	5-568	1-191	0-006	6-765
McIntyre Porcupine Mines Limited	0-627	4-685	1-024	0-315	6-651	0-224	1-696	8-571
Pamour Porcupine Mines Limited...	0-30	1-16	0-69	0-30	2-45	0-46	0-21	3-12
Paymaster Cons. Mines Limited...	0-88	3-22	1-49	0-72	6-31	0-27	0-44	7-20
Preston East Dome Mines Limited	1-46	4-07	0-84	0-30	6-67	1-37	0-45	8-49
Kirkland Lake District								
Bidgood Kirkland Gold Mines Ltd.	3-37	4-97	2-09	1-59	12-02	0-40		12-42
Macassa Mines Limited.....	1-16	5-15	1-53	1-87	9-71	1-04	1-15	11-90
Sylvanite Gold Mines Limited.....	2-135	2-671	1-320	1-429	7-555	0-463	1-245	9-265
The Teck-Hughes Gold Mines Limited.....	(c)	4-26	1-32	1-43	7-01		1-08	8-09
Upper Canada Mines Limited.....	2-77	3-27	1-12	0-97	8-13	0-74	0-78	9-65
Wright-Hargreaves Mines Limited	(c)	5-713	1-880	2-120	9-713	0-332	2-974	13-019
Larder Lake District								
Chesterville Larder Lake Gold Mining Co., Limited.....	0-90	1-23	1-06	0-64	3-83	0-49		4-32
Kerr-Addison Gold Mines Limited	0-667	1-207	0-736	0-507	3-107	1-136	0-977	5-220
Omega Gold Mines Limited.....	0-51	3-093	1-552	0-068	4-754	0-120	0-005	4-889
Matachewan District								
Hollinger Cons. Gold Mines Ltd. (Young-Davidson).....	0-068	0-977	0-747	0-389	2-181	0-786	0-397	3-364
Thunder Bay District								
Leitch Gold Mines Limited.....	3-16	9-07	3-42	0-42	16-07	2-01	3-46	21-54
Little Long Lac Gold Mines Limited.....	1-04	4-80	2-15	1-66	9-65	0-02	0-51	10-18
MacLeod-Cockshutt Gold Mines Limited.....	2-075	2-713	2-114	1-532	8-434	0-26	0-058	8-752
Patricia District								
Hasaga Gold Mines Limited.....	0-777	1-438	1-182	0-326	3-723	0-525		4-248
Madsen Red Lake Gold Mines Limited.....	2-197	2-256	1-233	1-316	7-002	0-821	1-365	9-188
McKenzie Red Lake Gold Mines Limited.....	0-894	3-592	1-518	1-749	7-753	0-33		8-083
Pickle Crow Gold Mines Limited..	4-25	4-56	1-52	1-60	11-93	1-47	2-55	15-95
British Columbia								
Bralorne Mines Limited.....	1-19	4-47	1-04	3-11	9-81			
Cariboo Gold Quartz Mining Co. Limited.....	1-435	10-557	3-360	1-414	16-766	1-444		18-210
Hedley Mascot Gold Mines Limited	3-10	2-49	2-20	3-44	11-23	1-00	0-18	12-41
Island Mountain Mines Co. Limited	0-45	7-08	2-94	0-20	10-67	0-32	1-85	12-84
Kelowna Exploration Co. Limited	0-849	2-985	2-082	3-711	9-627	0-988	1-005	11-620
Sheep Creek Gold Mines Limited...	0-836	5-465	2-461	1-619	10-381	0-078	1-005	11-464
Silbak Premier Mines Limited.....	0-680	2-846	1-624	5-905	11-055		0-347	11-402

(a) Exclusive of outside exploration.

(b) Marketing, head office, etc. (exclusive of taxes).

(c) Included in mining.

Table 63.—Employees and Salaries and Wages Paid by Entire Auriferous Quartz Mining Industry(*), 1926-1945

Year	Wage- earners	Salaried em- ployees	Total employees		Wages paid	Average per capita wages paid	Salaries paid		Total salaries and wages
	Number	Number	Number		\$	\$	\$		\$
1926.....	7,159	504	7,663		10,941,722	1,528	1,398,901		12,340,623
1927.....	7,535	487	8,022		11,518,516	1,529	1,417,203		12,935,719
1928.....	8,458	608	9,066		12,978,628	1,534	1,637,362		14,615,990
1929.....	8,136	524	8,660		12,715,108	1,563	1,543,625		14,258,733
1930.....	7,935	466	8,401		12,490,362	1,574	1,544,258		14,034,620
1931.....	9,083	553	9,636		14,755,669	1,625	1,711,496		16,467,165
1932.....	9,809	633	10,442		15,803,139	1,611	1,883,445		17,686,584
1933.....	11,880	943	12,823		18,303,504	1,541	2,232,508		20,536,012
1934.....	16,139	1,623	17,762		24,017,667	1,488	3,139,220		27,156,887
1935.....	18,121	1,713	19,834		27,717,164	1,529	3,806,743		31,523,907
1936.....	22,662	2,435	25,097		35,049,354	1,547	4,777,388		39,826,742
1937.....	26,440	2,700	29,140		42,505,613	1,608	5,713,705		48,219,318
1938.....	26,938	2,709	29,647		44,302,484	1,645	6,659,608		50,462,092
1939.....	27,959	2,663	30,622		46,836,845	1,675	6,369,380		53,206,225
1940.....	28,747	2,658	31,405		48,410,841	1,684	6,794,255		55,205,096
1941.....	29,820	2,731	32,551		54,735,716	1,836	7,415,094		62,150,810
1942.....	23,517	2,513	26,030		47,409,542	2,016	6,979,330		54,388,872
1943.....	17,061	1,977	19,038		34,576,891	2,027	6,088,392		40,665,283
1944.....	15,260	1,966	17,226		31,151,908	2,041	5,871,597		37,023,505
1945.....	15,807	2,581	Male	Female	31,051,187	1,964	Male	Female	37,690,177
			17,995	393			6,200,811	287,523	

(*) Including any bonus paid.

Table 64.—Salaries and Wages Paid, Fuel and Electricity Used and Process Supplies Consumed by the Auriferous Quartz Mining Industry, by Provinces, 1929-1945

Year	Nova Scotia		Quebec		Ontario		Manitoba	
	Producing	Non-producing	Producing	Non-producing	Producing	Non-producing	Producing	Non-producing
	\$	\$	\$	\$	\$	\$	\$	\$
1929.....	39,892	12,376	224,091	188,836	13,641,012	1,052,884	343,248	90,233
1930.....	16,044	.....	403,848	.....	14,106,811	286,813	231,474	62,300
1931.....	5,409	3,988	573,192	48,115	16,543,014	448,768	256,743	62,231
1932.....	4,500	51,861	924,375	328,091	17,712,698	162,763	496,049	.....
1933.....	17,612	28,090	1,544,880	744,382	18,128,149	590,012	588,125	154,194
1934.....	206,729	32,940	2,007,574	1,418,330	20,763,904	1,419,484	826,625	512,586
1935.....	408,422	57,353	4,105,141	1,754,595	30,809,094	1,866,010	1,659,407	312,017
1936.....	779,767	40,304	6,448,220	2,317,382	35,829,753	3,789,527	1,896,053	217,017
1937.....	815,398	43,612	8,956,849	3,104,728	41,230,811	5,897,085	2,043,151	121,042
1938.....	808,872	8,831	11,396,444	1,396,019	46,899,149	2,473,232	1,914,962	15,627
1939.....	829,631	4,681	12,604,061	940,207	52,470,713	1,321,013	1,621,765	190,753
1940.....	596,592	158	14,090,722	770,280	54,745,840	1,895,822	1,642,103	2,558
1941.....	457,305	9,342	16,256,086	978,161	59,620,822	399,527	1,796,321	.....
1942.....	225,276	6,104	17,160,699	159,376	50,881,444	175,528	1,557,240	.....
1943.....	162,920	.....	14,892,857	159,840	38,831,504	8,681	958,737	.....
1944.....	107,802	2,548	13,323,443	523,566	35,312,042	322,219	595,795	.....
1945.....	171,000	2,648	11,701,727	224,917	34,041,088	836,664	630,069	119,657
Grand Total..	57,037,771	302,491	136,674,209	15,054,825	581,567,843	21,946,932	19,057,867	1,860,754
1929.....	Saskatchewan		British Columbia		Northwest Territories		Canada	
1929.....	.....	.....	1,018,499	299,143	.....	.....	15,266,742	1,571,472
1930.....	.....	.....	1,273,757	17,078	.....	.....	16,032,534	366,191
1931.....	.....	.....	1,210,309	15,722	.....	.....	18,588,667	578,824
1932.....	.....	3,350	1,027,168	7,228	.....	.....	20,164,785	553,293
1933.....	.....	.....	1,736,556	334,149	.....	.....	22,015,322	1,850,827
1934.....	.....	8,367	3,398,918	810,726	.....	.....	27,203,750	4,202,433
1935.....	.....	94,162	6,312,731	678,467	.....	.....	43,354,795	4,763,143
1936.....	.....	79,963	7,287,019	863,104	.....	42,766	52,359,463	7,359,063
1937.....	118,651	391,097	7,836,968	970,666	.....	321,305	60,945,606	10,849,835
1938.....	62,429	519,791	9,526,363	338,303	.....	442,035	71,077,324	5,193,841
1939.....	490,633	4,291	8,963,013	425,451	.....	614,912	77,594,728	3,048,947
1940.....	602,534	.....	9,094,704	118,225	.....	329,643	81,886,915	2,216,686
1941.....	726,468	.....	9,613,778	152,619	.....	19,966	90,120,713	1,559,615
1942.....	413,441	.....	7,031,550	101,616	.....	.....	79,484,536	442,624
1943.....	80	.....	3,771,871	26,010	.....	.....	59,632,271	194,531
1944.....	.....	38,060	3,372,009	61,892	.....	20,946	53,124,137	969,231
1945.....	.....	40,471	3,819,667	213,254	.....	713,742	50,670,087	2,151,353
Grand Total..	2,414,236	1,179,552	86,294,880	5,533,653	7,809,569	2,052,954	839,522,375	47,862,909

Table 65.—Wage-Earners, by Months, In the Entire Auriferous Quartz Mining Industry, 1931, 1940-1945

Month	1931	1940	1941	1942	1943	1944	1945
January.....	8,273	27,823	29,772	26,730	19,332	15,796	15,222
February.....	8,482	28,012	29,765	26,812	19,180	16,001	15,137
March.....	8,681	28,270	29,733	26,451	18,822	16,014	14,887
April.....	8,746	28,295	29,633	26,155	18,123	15,634	14,573
May.....	9,030	28,864	29,869	25,325	17,421	15,314	14,624
June.....	9,319	28,528	29,807	24,938	17,138	15,172	14,873
July.....	9,345	28,741	30,310	23,687	16,743	15,134	15,082
August.....	9,285	28,955	30,158	21,883	16,173	14,837	15,249
September.....	9,391	29,626	30,605	21,246	15,687	14,501	15,746
October.....	9,524	30,106	30,870	20,024	15,241	14,486	16,988
November.....	9,496	30,153	29,567	19,692	15,479	14,786	18,110
December.....	9,323	29,380	27,566	19,192	14,976	14,595	18,170

Table 66.—(†) Employment in Producing Lode Gold Mines in Canada, by Provinces, 1945 and 1946(*)

Month	Quebec		Ontario		British Columbia		Other districts and provinces		Canada	
	1945	1946	1945	1946	1945	1946	1945	1946	1945	1946
January.....	3,593	3,651	10,527	12,716	1,165	1,655	179	322	15,464	18,344
February.....	3,641	3,687	10,379	12,929	1,162	1,679	180	328	15,362	18,623
March.....	3,635	3,658	10,305	13,161	1,210	1,675	176	226	15,326	18,720
April.....	3,456	3,572	10,040	13,111	1,147	1,602	159	290	14,802	18,575
May.....	3,226	3,472	9,927	13,324	1,116	1,366	170	314	14,439	18,476
June.....	3,219	3,342	9,877	13,426	1,045	1,172	170	309	14,311	18,429
July.....	3,181	3,635	10,045	13,455	1,046	297	181	315	14,453	17,702
August.....	3,173	3,573	10,131	13,147	1,063	.....	177	333	14,544	17,053
September.....	3,152	3,260	10,551	13,009	1,097	.....	178	324	14,978	16,593
October.....	3,339	3,426	11,315	13,199	1,228	.....	291	306	16,173	16,931
November.....	3,328	3,437	11,986	13,219	1,400	.....	303	335	17,017	16,991
December.....	3,487	3,351	12,265	13,364	1,564	1,172	305	341	17,621	18,228

(†) Mines with 15 or more employees.
(*) Subject to revision.

Table 67.—Employment in Active But Non-Producing Lode Gold Mines in Canada, 1945 and 1946

Month	1945	1946(*)	Month	1945	1946(*)
January.....	622	713	July.....	798	298
February.....	709	804	August.....	924	625
March.....	644	697	September.....	890	615
April.....	753	669	October.....	844	526
May.....	946	695	November.....	978	773
June.....	781	735	December.....	699	157

(*) Subject to revision.

Table 68.—Classification of Wage-Earners Employed in Entire Auriferous Quartz Mining Industry, 1944 and 1945

Province	1944					1945				
	Number					Number				
	Mine		Mill			Mine		Mill		
	Surface	Under-ground	Male	Female	.....	Surface	Under-ground	Male	Male	Female
Nova Scotia.....	22	38	5	.....	.....	25	1	41	4	.....
Quebec.....	1,075	20	2,376	392	1	1,365	32	2,030	285	.....
Ontario.....	2,681	64	6,397	931	.....	2,971	68	6,454	881	.....
Manitoba.....	52	4	74	15	.....	95	6	91	15	.....
Saskatchewan.....	14	.....	.....	.....	.....	9	1	.....	.....	.....
British Columbia.....	311	31	546	148	.....	390	29	619	170	.....
Northwest Territories.....	33	.....	23	7	.....	182	7	27	4	.....
Yukon.....	.....	.....	.....	.....	.....	5	.....	.....	.....	.....
Canada.....	4,188	119	9,454	1,498	1	5,042	144	9,262	1,359	.....

Table 69.—Number of Wage-Earners Who Worked the Number of Hours Specified, During One Week in Month of Highest Employment (Includes overtime and any bonus) 1945

	30 hours or less	31-43 hours	44 hours	45-47 hours	48 hours	49-50 hours	51-54 hours	55 hours	56-64 hours	65 hours and over	Grand Total	Total wages paid in that week (*)
												\$
Male.....	667	1,504	140	320	12,879	338	882	139	1,902	399	19,170	729,991
Female.....	9	19	6	2	70	3	.....	.....	10	10	129	3,552

(*) This item includes the actual money wages paid, the value of room and board, where provided, deductions from employees for income tax and for social services, such as sickness, accident, insurance, pensions, etc., as well as any other allowances forming part of the employees' wages. (Includes payments for overtime and any bonus.)

Table 70.—Average Annual, Weekly and Hourly Earnings of Male and Female Wage-Earners in the Producing Auriferous Quartz Mines, 1940-1945

Year	Male				Female			
	Average Earnings			Hours Worked per Week	Average Earnings			Hours Worked per Week
	Annual	Weekly	Hourly		Annual	Weekly	Hourly	
	\$	\$	\$	Number	\$	\$	\$	Number
1940.....	1,687	33.83	0.658	51.4	.....	.....	.....	.....
1941.....	1,840	35.73	0.692	51.6	.....	.....	.....	.....
1942.....	2,020	37.56	0.732	51.3	1,141	21.23	0.425	49.9
1943.....	2,035	38.97	0.776	50.2	1,260	24.13	0.487	49.5
1944.....	2,055	40.39	0.818	49.4	1,286	25.27	0.513	49.3
1945.....	2,001	38.12	0.795	47.9	1,159	27.64	0.593	46.6

Table 71.—Cost of Prospecting Conducted by Canadian Auriferous Quartz Mining Companies, 1944 and 1945

Province prospecting was conducted in—(a)	By Quebec companies (b)	By Ontario companies (b)	By Manitoba companies (b)	By Saskat- chewan companies (b)	By British Columbia companies (b)	By Yukon and Northwest Territories companies	Total
	\$	\$	\$	\$	\$	\$	\$
1944							
Nova Scotia.....	.....	.....	.....	.....	.....	.....	.....
New Brunswick.....	.....	.....	.....	.....	.....	.....	.....
Quebec.....	503,901	80,056	.....	.....	.....	.....	583,957
Ontario.....	81,406	437,265	4,932	.....	.....	.....	530,336
Manitoba.....	5,869	3,310	.....	.....	12,176	.....	21,355
Saskatchewan.....	.....	.....	.....	.....	117,701	.....	130,516
British Columbia.....	.....	12,815	.....	.....	1,563	46,837	48,495
Northwest Territories.....	.....	95	.....	.....	4,961	.....	4,961
Yukon.....	.....	.....	.....	.....	.....	.....	.....
Total Canada.....	591,271	533,446	4,932	.....	143,134	46,837	1,319,620
1945							
Nova Scotia.....	827	1,069	.....	.....	.....	.....	1,896
New Brunswick.....	.....	.....	.....	.....	.....	.....	.....
Quebec.....	1,380,656	155,524	.....	.....	.....	11,215	1,547,395
Ontario.....	91,527	1,324,929	.....	.....	.....	6,377	1,422,833
Manitoba.....	6,319	26,173	103,739	4,943	.....	16,512	157,686
Saskatchewan.....	.....	.....	.....	8,778	.....	21,324	30,102
British Columbia.....	46,433	48,457	.....	.....	104,775	47,083	246,778
Northwest Territories.....	40,927	331,375	6,970	.....	740	598,767	978,779
Yukon.....	.....	13,108	.....	.....	.....	51,203	64,311
Total Canada.....	1,566,689	1,900,665	110,709	13,721	105,515	752,481	4,449,780

(a) Prospecting includes the search for new mineral deposits on the surface, and preliminary exploration.
 (b) Province in which the companies' principal operations are conducted.

Table 72.—Specified Taxes Paid by Active Canadian Auriferous Quartz Mines in 1944 and 1945 by Provinces(*)

Nature of Tax	Nova Scotia	Quebec	Ontario	Manitoba	British Columbia	Northwest Territories	Canada
	\$	\$	\$	\$	\$	\$	\$
1944							
Dominion Income Tax, including tax on non-operating revenue.....		467,394	3,568,048	112,499	221,954	29,538	4,399,433
Dominion Excess Profits tax.....		433,886	3,422,893	211,655	256,872	23,914	4,349,220
Provincial taxes.....	561	241,873	646,464		106,401	4,677	999,976
Municipal taxes.....	938	122,090	194,250		16,847	1,937	336,062
Total All Specified Taxes..	1,499	1,265,243	7,831,655	324,154	602,074	60,066	10,084,691
1945							
Dominion Income Tax, including tax on non-operating revenue.....		530,915	2,139,636	72,717	225,152	22,842	2,991,262
Dominion Excess Profits Tax.....		490,003	3,399,707	105,943	248,491	27,251	4,271,395
Provincial taxes.....	581	250,100	295,328	250	110,424	8,081	664,764
Municipal taxes.....	1,125	111,085	184,160	251	5,637	11,200	313,478
Total All Specified Taxes..	1,706	1,382,103	6,018,831	179,161	589,724	69,374	8,240,899

(*) Does not include complete data relating to taxes that may have been paid by dormant firms.

Table 73.—Certain Specified Expenditures Made by Auriferous Quartz Mining Companies, 1942-1945

Province and Year	Workmen's compensation	Silicosis assessment	Unemployment insurance	Aggregate cost of all supplies purchased	Aggregate cost of plant and equipment purchased	Cost of buildings, machinery and equipment erected or installed
	\$	\$	\$	\$	\$	\$
Nova Scotia—						
1942....	4,413		958	13,624	5,400	(*)
1943....	5,032		1,000	28,508	6,000	(*)
1944....	4,511		935	30,108	5,290	
1945....	4,309		1,191	21,732	6,204	200
Quebec—						
1942....	356,993	3,733	70,804	6,156,189	1,294,283	(*)
1943....	276,270	3,864	65,393	4,985,946	382,997	(*)
1944....	268,668	604	54,237	4,486,519	484,699	514,139
1945....	333,339	446	52,076	4,873,803	840,504	1,166,339
Ontario—						
1942....	852,379	746,827	227,966	16,490,839	1,907,407	(*)
1943....	679,519	562,053	194,002	12,687,037	532,737	(*)
1944....	629,785	295,269	154,672	11,639,621	571,010	378,286
1945....	645,288	288,470	142,803	12,172,411	702,336	1,171,712
Manitoba—						
1942....	29,554	7,003	4,988	459,890	34,674	(*)
1943....	20,561	4,920	3,264	263,082	18,646	(*)
1944....	12,492	3,123	2,074	225,705	12,844	20,931
1945....	15,743	3,487	2,972	296,102	40,792	45,927
Saskatchewan—						
1942....	(*)	(*)	(*)	(*)	(*)	(*)
1943....	(*)	(*)	(*)	(*)	(*)	(*)
1944....	379		197	8,820	20,000	25,660
1945....	587		284	2,160	16,596	11,237
British Columbia—						
1942....	138,086	139,043	22,748	1,863,036	83,257	(*)
1943....	104,921	104,816	18,092	1,112,819	28,307	(*)
1944....	114,866	71,630	13,852	1,230,811	30,289	32,415
1945....	118,157	93,523	15,325	1,266,627	171,105	315,528
Northwest Territories—						
1942....	17,485		3,788	1,034,559	118,045	(*)
1943....	17,206		2,575	451,798	573,969	(*)
1944....	6,191		850	178,193	18,532	8,852
1945....	16,854	43	3,679	611,511	164,474	344,443
Yukon—						
1945....	1,014	690	16	2,822		
Total Canada—						
1942....	1,398,910	896,606	331,252	26,018,137	3,443,066	(*)
1943....	1,103,509	675,653	284,326	19,529,190	1,552,656	(*)
1944....	1,036,892	370,626	226,817	17,799,777	1,142,664	980,283
1945....	1,135,291	386,659	218,346	19,247,168	1,942,011	3,055,386

(*) Data not available.

Table 74.—Drilling Completed on Auriferous Quartz Deposits in 1944 and 1945

	Footage Drilled (a)	
	1944	1945
Diamond drilling for exploration (testing)—		
By companies with their own equipment and personnel.....	513,333	591,243
By contractors.....	1,648,418	4,011,223
Other drilling—		
Diamond drilling for breaking rock or ore—		
By companies with their own equipment and personnel.....	83,672	134,555
By contractors.....	444,359	420,519
Diamond by percussion and other machines (b).....	17,830,270	14,649,301

(a) Subject to revision as drilling was not reported by some new companies.

(b) This is not complete as some companies do not compile these data.

The value of diamonds in all forms (bits, etc.) purchased by gold mining companies in 1945 totalled \$157,144.

Table 75.—Dividends Paid and Ore Reserves of Specified Canadian Gold Mining Companies

Name of Firm	Dividends Paid		Estimated Ore Reserves (†)		Year of First Production
	During 1945	Total to Dec. 31, 1945	Total	Average ounces fine gold per ton	
QUEBEC					
	\$	\$	tons		
Beattie Gold Mines (Quebec) Limited.....		4,435,023	3,778,400	0-130	1933
Belleterre Quebec Mines Limited.....	150,000	150,000	(i) 600,923	(i) 0-325	1936
Canadian Malartic Gold Mines Limited.....	146,054	2,153,074	1,820,000	0-121	1935
East Malartic Mines Limited.....		2,200,000	2,665,800	0-202	1938
Francoeur Gold Mines Limited.....		208,884	230,400	0-187	1938
Lamaque Mining Company Limited.....	459,015	9,216,536	2,558,943	0-213	1935
Malartic Gold Fields Limited.....		400,000	{ 264,340 2,336,040	{ 0-16 0-22}	1939
Mic-Mac Mines Limited.....			(*)	(*)	1942
O'Brien Gold Mines Limited.....	162,500	1,625,000	(k) 199,142	0-449	1926
Perron Gold Mines Limited.....	200,000	2,300,000	200,934	0-1867	1933
Powell Rouyn Gold Mines Limited.....		287,500	346,637	0-139	1937
Senator-Rouyn Limited.....		102,250	350,000	0-1643	1940
Sigma Mines (Quebec) Limited.....	600,000	3,450,000	1,349,700	0-209	1937
Siscoe Gold Mines Limited.....	69,601	8,232,803	86,505	0-139	1929
Sladen-Malartic Mines Limited.....			509,000	0-1123	1938
Stadacona Rouyn Mines Limited.....			539,341	0-162	1936
Sullivan Consolidated Mines Limited.....		2,240,000	629,550	0-2535	1934
West Malartic Mines Limited.....			(*)	(*)	1942
ONTARIO					
Porcupine District					
Aunor Gold Mines Ltd.....	400,000	1,800,000	601,900	0-347	1940
Bonetal Gold Mines Ltd.....			(*)	(*)	1941
Broulan Porcupine Mines Ltd.....	53,880	1,091,071	245,000	0-18	1939
Buffalo Ankerite Gold Mines Ltd. (a).....	35,084	2,763,009	244,556	0-205	1932
Coniaurum Mines Ltd. (b).....	221,339	3,227,751	(h) 81,047	0-295	1928
Delnite Mines Ltd.....		625,541	(h) 38,055	0-162	1937
Dome Mines Ltd.....	2,336,002	60,877,874	2,412,000		1910
Hallnor Mines Ltd.....	600,000	6,100,000	515,352	0-37	1938
Hollinger Cons. Gold Mines Ltd. (Timmins).....	2,263,200	120,812,800	7,509,863	0-324	1910
Hollinger Cons. Gold Mines Ltd. (Ross).....			587,433	0-221	1936
Hoyle Gold Mines Ltd.....			1,200,000	0-105	1941
McIntyre Porcupine Mines Ltd.....	2,657,340	38,384,146	(i) 600,923	0-325	1912
Pamour Porcupine Mines Ltd.....	250,000	3,550,000	1,163,100	0-1088	1936
Paymaster Cons. Mines Ltd. (c).....	86,291	690,325	(j) 575,419	0-222	1934
Preston East Dome Mines Ltd.....	540,000	3,840,000			1938
Kirkland Lake District					
Bidgood Kirkland Gold Mines Ltd.....			(*)	(*)	1934
Kirkland Lake Gold Mining Co. Ltd.....	213,068	4,360,011	364,384		1919
Lake Shore Mines Ltd.....	1,600,000	94,020,000	(*)	(*)	1918
Macassa Mines Ltd.....	321,368	7,129,551	412,600	0-444	1923
Sylvanite Gold Mines Ltd.....	395,940		(h) 53,538		1927
Teck-Hughes Gold Mines Ltd.....	721,072	41,171,295	281,472	0-344	1917
Toburn Gold Mines Ltd (d).....	55,500	2,312,500	72,600	0-525	1913
Upper Canada Mines Ltd.....	148,151	1,570,397	(*)	(*)	1938
Wright-Hargreaves Mines Ltd.....	1,100,000	43,532,500	990,739	0-47	1913

For footnotes, see end of table, p. 74.

Table 75.—Dividends Paid and Ore Reserves of Specified Canadian Gold Mining Companies—Concluded

Name of Firm	Dividends Paid		Estimated Ore Reserves (†)		Year of First Production
	During 1945	Total to Dec. 31, 1945	Total	Average ounces fine gold per ton	
Larder Lake District	\$	\$	tons		
The Chesterville Larder Lake Gold Mining Co. Ltd.		442,568	325,200	0.13	1939
Kerr-Addison Gold Mines Ltd. (f)	1,419,090	8,514,542	8,379,951	0.1975	1938
Omega Gold Mines Ltd. (e)			(i) 155,457	0.144	1936
Matachewan District					
Hollinger Cons. Gold Mines Ltd. (Young-Davidson)		277,219	(*)	(*)	1934
Matachewan Consolidated Mines Ltd.		68,600	811,127	0.11	1934
Sudbury District					
Jerome Gold Mines Ltd.			(j) 344,000	0.19	1941
Thunder Bay District					
Hard Rock Gold Mines Ltd.		926,923	(o) 149,000	0.2707	1938
Leitch Gold Mines Ltd.	232,400	1,687,153	168,056	0.845	1936
Little Long Lac Gold Mines Ltd.	92,050	3,903,325	424,397	0.306	1934
MacLeod-Cockshutt Gold Mines Ltd.		1,424,145	(g) 513,266	0.225	1938
Patricia District					
Berens River Mines Ltd.		420,000	39,000	0.25	1939
Cochonour Willans Gold Mines Ltd.		975,846	(*)	(*)	1939
Central Patricia Gold Mines Ltd.	300,000	4,050,000	415,661	0.34	1934
Hasaga Gold Mines Ltd.			190,777	0.1524	1938
Madsen Red Lake Gold Mines Ltd.	279,962	1,293,625	(p) 797,290	0.203	1938
McMarnac Red Lake Gold Mines Ltd.		82,000	(*)	(*)	1940
McKenzie Red Lake Gold Mines Ltd.		2,873,840	(*)	(*)	1935
Pickle Crow Gold Mines Ltd.	300,000	8,250,000	695,095	0.377	1935
MANITOBA					
San Antonio Gold Mines Ltd.	478,224	4,752,641	740,000	(*)	1932
BRITISH COLUMBIA					
Bralorne Mines Limited.	1,247,000	13,831,450	1,088,000	0.503	1932
Cariboo Gold Quartz Mining Co. Limited.		1,629,968	322,250	0.382	1933
Hedley Mascot Gold Mines Limited.		1,290,556	(*)	(*)	1936
Island Mountain Mines Co. Limited.	73,550	1,108,494	62,800	0.473	1934
Kelowna Exploration Co. Limited (r)	210,000	1,560,000	(*)	(*)	1935
Pioneer Gold Mines of B.C. Limited.		9,301,793	(i) 187,940	0.427	1928
Privateer Mine Limited (inc. Prident)		1,914,183	33,956	0.40	1937
Sheep Creek Gold Mines Limited.	225,000	2,587,500	97,886	0.365	1935
Silbak Premier Mines Limited (s)	50,000	2,350,000	77,156	0.25	1937
NORTHWEST TERRITORIES					
Negus Mines Ltd.	49,925	499,250	(q) 36,300	0.614	1939

(a) Acquired Ankerite in 1932 and Marbuan in 1935.

(b) Acquired Newray in 1924.

(c) A merger in 1930 of West Dome Lake, Dome Lake Gold and United Mineral Lands Corp. (Paymaster).

(d) Toburn Gold Mines acquired Tough-Oakes-Burnside in 1931.

(e) Acquired properties from Canadian Reserve and Proprietary Mines in 1935.

(f) Small production at Reddick Mine prior to 1918.

(g) September 30, 1945.

(h) Broken ore.

(i) March 31, 1946.

(j) June 30, 1945.

(k) October 1, 1945.

(l) March 31, 1946.

(m) August 31, 1945.

(n) Additional 101,662 tons in pillars, average 0.448 oz.

(o) After sorting.

(p) February 28, 1946—additional 80,000 tons at 0.24 oz.

(q) Additional 11,000 tons possible ore average 0.572 oz.

(r) Purchased Hedley Gold property 1933; previous production dates to 1898.

(s) Premier Gold production dates to 1919.

(*) Data not available.

(†) Subject to revision and based on information secured from companies' annual printed reports.

It should be noted that annual estimates of ore reserves are more or less based on current development and exploration to date, and that eventual or actual ore reserves of most producing mines are often in excess of those recorded in this report.

THE COPPER-GOLD-SILVER MINING INDUSTRY, 1945

The mining of "copper-gold-silver" ores in Canada during 1945 was confined to the provinces of Quebec, Ontario, Manitoba, Saskatchewan and British Columbia. It is to be noted that in addition to the copper recovered from ores of this type there is a very large quantity of the metal obtained in the smelting and refining of the copper-nickel ores mined in the Sudbury area of Ontario; important quantities of gold and silver are also being extracted from these copper-nickel ores. General statistics relating to labour, etc., in the nickel-copper industry are not included in this report.

Mining operations conducted on Canadian copper-gold-silver deposits (sulphides) during 1945 were reported by 38 firms compared with 23 in 1944 and 20 in 1943. The gross value of crude ore, concentrates, etc., shipped in 1944 from the mines and mills to smelters was estimated at \$59,299,872; the cost of fuel, purchased electricity, process supplies, freight and treatment totalled \$21,134,603 and the net value of shipments was computed at \$38,165,269. Employees in 1945 totalled 4,658 compared with 5,175 in 1944 and 5,748 in 1943.

The gross value of ores shipped by firms which both mine and smelt their own ores is sometimes not reported. This necessitates considerable estimating in determining gross and net values for mine shipments. However, possible abnormal evaluations resulting from this are largely compensated for in determining the value added at the smelters and refineries. This added value is credited to the non-ferrous smelting and refining industry and is also included in the total net value of production of the entire Canadian mining industry. This fact should be noted in making any statistical study of the annual production values shown for shipments from copper-gold-silver mines.

The statistics as herein shown under the copper-gold-silver mining industry refer only to mines and mills and are not inclusive of data pertaining to the operation of smelters and refineries. Statistics relating to the reduction of non-ferrous ores are recorded under the non-ferrous smelting and refining industry.

Quebec.—Noranda Mines Limited.—"A total of 1,109 feet of drifting, 1,044 feet of raising and 51,700 feet of exploratory diamond drilling was done. Except for diamond drilling, underground exploration work had to be practically stopped due to the acute shortage of miners. The diamond drilling was in the nature of filling in between more widely spaced holes drilled in previous years and no new information of particular significance was obtained. Following a magnetometer survey on the ice over an area of about 280 acres, part of which is adjacent on the east to property of Quemont Mining Corporation, Ltd., three diamond drills have been placed in operation to determine whether the geological conditions disclosed on the adjoining Quemont claim extend over unto our property and for the purpose of further exploration of our ground known as the Adsit claim.

"During 1945 the smelter treated 923,091 tons of ore, concentrate and slag, including 291,577 tons of custom ores and concentrates, and produced 106,292,352 pounds of anodes. After deducting the copper, gold and silver, which was recovered from slags received from various shippers, the estimated production of new metals was 102,323,546 pounds of fine copper, 226,095 ounces of gold and 1,149,970 ounces of silver. The estimated recovery from Horne Mine, ore and concentrate, was 53,565,532 pounds of copper, 174,217 ounces of gold and 439,330 ounces of silver.

"During the year under review the concentrator treated 858,523 tons of ore from the Horne Mine, from which 153,789 tons of copper-gold concentrate were produced and sent to the smelter. The cyanide mill treated 161,087 tons of pyrite from the flotation circuit tailing, from which 13,658 ounces of gold were recovered. 156,482 tons of pyrite were recovered from the cyanide mill tailing and sold to chemical plants."

Normetal Mining Corporation Limited.—"Average daily tonnage was 559, an increase of 29 tons per day over the previous year. All concentrates were shipped as produced, the copper to Noranda Smelter, the zinc to smelters in the United States. Following is summary of development work done during the year: Drifts, 2,087 feet; crosscuts, 1,400 feet; raises, 858 feet; stations and pockets, 59 feet; diamond drilling (underground), 8,947 feet.

"Most of the lateral work was done on the 2,300-foot, the 2,750-foot and the 3,200-foot levels. A total of 207,365 tons of ore was broken. Of this amount, 200,253 tons came from filled square-

set stopes and stope preparation work, and the balance from development leadings. Slightly more than 80% of all ore hoisted was mined in stopes above the 2,150-foot level. Backfill amounting to 50,845 tons was placed."

Queмонт Mining Corporation Limited.—"At the end of March, when ice conditions forced the drills off Osisko Lake, a total of 60,136 feet had been drilled since the start of surface diamond drilling in 1944. Of that total 25,607 feet were angle holes drilled largely from the shore while 34,529 feet were vertical holes drilled from the ice and the adjoining point of land. A number of the vertical holes were drilled for the purpose of finding a suitable shaft site at sufficient distance from any known ore body.

"During 1945 the old two-compartment shaft was rehabilitated and the necessary plant and equipment installed to resume underground work. The 200 level was extended in the direction of the ore indicated by surface diamond drilling. As the orebodies are flat lying, the 200 level is well situated to fully outline and develop the western part of the orebody which is largely below that level. By the middle of April 3,050 feet of driving and 8,377 feet of diamond drilling had been completed on the 200-foot level.

"The 900-foot level was also advanced for the purpose of prospecting below the already indicated upper ore areas. By the middle of April, 1806 feet of driving and 1,968 feet of diamond drilling had been completed on this level."

Waite Amulet Mines Limited.—"A number of vertical holes were drilled in the area to the west and southwest of the Waite number two shaft. No commercial ore was found. Due to low footage drilled during the past year, at least another year's drilling will be required to complete the exploration of this part of the property. No drilling was done from surface on the Amulet Section. A number of holes were drilled vertically from the 1,000-foot level of the Amulet Dufault. Results were inconclusive and more deep drilling will have to be done below Lower "A" Orebody. Ore hoisted at the Waite Mine was 59,957 tons, at "C" shaft 50,185 tons, from Amulet Dufault 407,771 tons."

Manitoba and Saskatchewan.—Hudson Bay Mining and Smelting Co. Limited: "Labour shortages continued throughout most of the year, but there was some easement toward the end of the year as former employees began returning from the armed forces. There were 1,822,628 tons of ore milled during the year, of which 36.6 percent was hoisted through the north shaft and 63.4 per cent through the south main shaft. The tonnage of ore milled was lower than for any year since 1939, but the production of blister copper was higher than in any other years except 1943 and 1944, and slab zinc production was higher than in any year prior to 1941. Production of gold, silver and cadmium was lower than it has been for a number of years.

The tonnages and average assay values of Hudson Bay concentrates and ores smelted and the tonnage of custom concentrates treated were as follows: Tons H.B. concentrates and ores 378,144, assay values per ton, Au. ozs., 0.317, Ag. ozs., 4.29, Cu % 11.36, tons custom concentrates 54,630."

Sherritt Gordon Mines Limited.—"Of the 646,092 tons of ore mined and milled approximately 56% of the tonnage from the West Mine came from between the 8th and 6th levels. Some pillar recovery was carried on in the eastern section of the West Mine between 3rd and 1st levels, including one pillar in the section in which the worked out stopes had been filled with mill tailings. This surface pillar, which had been drilled during the previous summer, produced a large tonnage per man shift and this was a great factor in being able to maintain a higher tonnage than would otherwise have been possible during a period of labor shortage through the summer months. Very little ore was mined from the East Mine underground stopes during the summer but this work was resumed when winter weather conditions prohibited further work from surface.

"The details of mill operations are shown in the following summary. Total dry tons milled 646,092, tons per calendar day 1,770.1. Assays of feed, Cu % 2.26, Zn % 2.34, Au oz., 0.0181, Ag. oz. 0.539. Assays of concentrate, Cu % 24.76, Zn % 48.94, Au oz. 0.138, Ag oz. 4.65. Throughout the year the mill operated an average of approximately five days per week, which left one day a week for repair and maintenance work."

British Columbia.—Britannia Mining and Smelting Co. Limited.—"The Britannia property again was forced to operate with a greatly depleted force during the year. Employment was at a very low level during the summer months but increased rapidly during the last quarter,

and at the end of December was at about 65% of normal. The men who are available are, for the most part, inexperienced as miners and can only be absorbed as they can be trained. Production remained low throughout the year and an adequate amount of development must be caught up before ore output can be increased. Most of the exploratory work during 1945 was in connection with the development of the No. 8 ore body and results have confirmed estimates which were made previously, after diamond drilling. It is anticipated that there will be a gradual but steady improvement in production from this property during 1946. Copper concentrate was sold currently, as produced. The price of copper remained unchanged throughout the year."

Granby Consolidated Mining, Smelting and Power Co. Limited.—During the year 786,026 tons of ore were mined and 785,629 tons were milled at the property located at Copper Mountain. The milled ore produced 26,122 dry tons of concentrates which contained 4,621 oz. of gold, 93,387 oz. of silver and 14,274,925 lbs. of copper. The concentrates were exported to Tacoma, Washington.

Table 76.—Principal Statistics (†) of the Copper-Gold-Silver Mining Industry in Canada for Specified Years

Year	Number of active operators (*)	Number of operating plants or mines (*)	Capital employed (*)	Number of employees (*)	Salaries and wages (*)	Cost of fuel and electricity (*)	Value of ores and concentrates shipped by mines
			\$		\$	\$	\$
1935.....	16	18	38,461,682	3,430	5,040,196	534,152	13,243,163
1936.....	19	21	40,732,717	3,738	5,473,325	495,843	15,619,897
1937.....	28	31	73,338,258	5,164	8,240,614	901,088	24,902,851
1938.....	37	39	65,416,729	5,577	8,921,465	1,100,284	28,795,492
1939.....	28	30	58,867,620	6,083	9,920,591	1,223,523	26,182,577
1940.....	25	26	60,446,948	6,115	10,777,827	1,297,454	25,804,419
1941.....	21	22	81,521,902	5,866	10,695,023	1,264,567	30,220,331
1942.....	26	28	84,776,243	5,646	11,097,412	1,338,737	33,688,642
1943.....	20	22	94,750,186	5,748	11,806,827	1,426,710	43,840,679
1944.....	23 (a)	26 (b)	5,175	5,175	10,710,071	1,402,243	38,198,039
1945.....	38 (c)	41 (b)	4,658	4,658	9,663,612	1,175,916	38,165,269

(†) Data relating to idle mines and smelters not included.

(*) Not including data relating to any Rossland properties leased by Consolidated Mining and Smelting Co. of Canada, Ltd.

(a) 15 producing.

(b) Not reported.

(c) 13 producing.

NOTE.—The cost of fuel, purchased electricity and process supplies was deducted beginning 1935; however, values for all years are less freight and estimated treatment charges. Also, value of ores and concentrates shipped from mines to smelters operated by the same companies are often of a nominal or conjectural nature.

Table 77.—Shipments from Copper-Gold-Silver Mines of Canada, 1944 and 1945

—	Quantity	Value	Total metal content as determined by settlement assay (c)				
			Gold	Silver	Copper	Sulphur	Zinc
	tons	\$	fine oz.	fine oz.	pounds	tons	pounds
1944							
12 mines shipped to Canadian plants							
(a) —							
Ores.....	530,579	7,438,664	79,516	508,091	35,392,376		
Copper concentrates.....	757,837	33,233,915	253,193	3,061,569	204,189,160		
Zinc concentrates.....	149,522	5,190,289	8,318	227,036	1,508,641		137,386,498
Iron pyrites concentrates.....	68,064	142,617				33,178	
Slags, residues, bullion, and gold precipitates.....	366	1,411,241	34,625	193,697	266,486		
11 mines shipped to foreign plants—							
Ores.....	84,920	5,676,914	18,194	306,198	39,940,660		(d) 943,067
Copper concentrates.....	125,465	8,837,074	421	11,575			128,873,442
Zinc concentrates.....	182,007	352,405				88,595	
Iron pyrites concentrates.....	570	106,696	3	69	705,277		
Total.....	1,899,330	62,389,815	394,270	4,308,235	282,002,600	121,773	266,259,940
Value of process supplies, etc. (b).....		24,191,776					
Net Value.....		38,198,039					

For footnotes, see end of table, p. 78.

Table 77.—Shipments from Copper-Gold-Silver Mines of Canada, 1944 and 1945
—Concluded

—	Quantity	Value	Total metal content as determined by settlement assay (c)				
			Gold	Silver	Copper	Sulphur	Zinc
	tons	\$	fine oz.	fine oz.	pounds	tons	pounds
1945							
11 mines shipped to Canadian plants (a)—							
Ores.....	518,902	8,594,812	74,200	593,058	41,044,522		
Copper concentrates.....	646,079	31,466,061	229,695	2,378,694	172,606,419		
Zinc concentrates.....	140,826	7,111,328	5,812	161,511	1,476,682		105,771,054
Iron pyrites concentrates.....	71,067	152,603				35,002	
Slags, residues, gold precipitates and bullion.....	325	1,241,062	30,094	182,636	12,382		
5 mines shipped to foreign plants—							
Ores.....	52,742	4,140,213	14,267	174,272	25,967,476		(d)1,511,353
Copper concentrates.....	91,845	6,139,799	554	14,705			94,831,659
Iron pyrites concentrates.....	156,667	329,608				75,201	
Precipitates.....	698	124,386			963,905		
Total.....	1,679,151	59,299,872	354,622	3,504,876	242,071,386	110,203	200,602,713
Value of process supplies, etc. (b)...		21,134,603					
Net Value.....		38,165,269					

(a) Certain mines, sometimes operated in Rossland area by several leases, are usually treated, statistically, as one mine.
(b) Includes freight on ore shipments, smelter charges and purchased electricity.
(c) In addition, cadmium, thallium, tellurium and selenium are recovered from these ores.
(d) Lead.

Table 78.—Content of Ores, Concentrates, etc., Shipped from Copper-Gold-Silver Mines, 1940-1943

—	Tons	Content				
		Gold	Silver	Copper	Zinc	Sulphur
		fine oz.	fine oz.	pounds	pounds	tons
To CANADIAN SMELTERS						
1940—						
Copper ore.....	860,237	156,857	372,408	35,648,576		
Copper concentrates.....	768,833	258,692	3,514,614	208,421,117	2,492,666	
Zinc concentrates.....	108,328	5,250	185,406	954,803	102,169,600	
Pyrites.....	36,308					17,619
Slag, precipitates, etc.....	566	23,739	120,970	530,712		
1941—						
Copper ore.....	865,921	159,647	320,994	22,516,954		
Copper concentrates.....	828,622	296,302	4,282,053	240,003,806	3,138,594	
Zinc concentrates.....	135,582	6,263	212,115	1,246,645	125,006,638	
Pyrites.....	94,818					45,446
Slag, precipitates, etc.....	189	28,893	113,299	162,553	68,337	
1942—						
Copper ore.....	760,973	146,412	318,805	28,927,383		
Copper concentrates.....	816,793	342,995	4,700,629	234,276,699		
Zinc concentrates.....	172,519	11,424	293,259	1,409,389	159,543,348	
Pyrites.....	69,014					32,580
Slag, precipitates, etc.....	193	35,146	227,776	129,659		
1943—						
Copper ore.....	772,641	148,995	373,215	38,948,373		
Copper concentrates.....	820,759	320,512	4,502,041	230,639,502		
Zinc concentrates.....	181,032	12,397	310,210	1,656,227	167,005,660	
Pyrites.....	65,395					32,116
Slag, precipitates, etc.....	198	36,749	240,302	151,001		
To FOREIGN SMELTERS						
1940—						
Copper ore.....	11	11	949	2,234		
Copper concentrates.....	159,316	39,952	492,352	78,778,442		
Zinc concentrates.....	30,389	456	45,552	444,808	32,558,961	
Pyrites.....	91,457					45,502

Table 78.—Content of Ores, Concentrates, Etc., Shipped From Copper-Gold-Silver Mines, 1940-1943—Concluded

	Tons	Content				
		Gold	Silver	Copper	Zinc	Sulphur
		fine oz.	fine oz.	pounds	pounds	tons
To FOREIGN SMELTERS						
1941—						
Copper ore.....	21	5	72	865		
Copper concentrates and precipitates....	145,549	49,802	430,563	68,313,890		
Zinc concentrates.....	51,983	471	47,051	397,450	57,515,573	
Pyrites.....	208,542					103,762
1942—						
Copper ore.....						
Copper concentrates and precipitates....	101,752	10,892	283,596	50,619,295		
Zinc concentrates.....	92,135				94,831,818	
Pyrites.....	310,470					150,199
1943—						
Copper ore.....						
Copper concentrates and precipitates....	94,714	20,410	299,753	45,227,248		
Zinc concentrates.....	131,418	85	3,797		134,809,240	
Pyrites.....	219,181					107,339

Table 79.—Classification of Wage-Earners Employed in the Copper-Gold-Silver Mining Industry, by Provinces 1943-1945

Year	Surface		Under-ground	Mill		Total	
	Male	Female	Male	Male	Female	Male	Female
Total Canada 1943.....	1,680	84	2,604	654	71	4,938	153
Total Canada 1944.....	1,389	145	2,254	689	76	4,332	221
1945							
Quebec.....	403	10	845	196	19	1,444	29
Ontario.....	6	1				6	1
Manitoba.....	218	25	375	70	6	663	31
Saskatchewan.....	473	20	352	115	23	940	43
British Columbia.....	214	29	347	272	14	833	43
Total Canada.....	1,314	85	1,919	653	62	3,886	147

Table 80.—Number of Wage-Earners Who Worked the Number of Hours Specified, During One Week in Month of Highest Employment, 1945, in Copper-Gold-Silver Mining Industry

	30 hours or less	31-43 hours	44 hours	45-47 hours	48 hours	49-50 hours	51-54 hours	55 hours	56-64 hours	65 hours and over	Grand total	Total wages paid in that week (*)
												\$
Male.....	193	631	305	105	2,269	100	380	110	282	88	4,463	172,556
Female.....	12	11	13		77		4	3	3	2	125	3,047

(*) Includes the actual money wages paid, the value of room and board, where provided, deductions from employees for income tax and for social services, such as sickness, accident, insurance, pensions, etc., as well as any other allowances forming part of the employees' wages. (Includes payments for overtime).

Table 81.—Average Annual, Weekly and Hourly Earnings of Male and Female Wage-Earners in the Entire Copper-Gold-Silver Mining Industry, 1940-1945

Year	Average Earnings			Hours worked per week	Average Earnings			Hours worked per week
	Male				Female			
	Annual	Weekly	Hourly		Annual	Weekly	Hourly	
	\$	\$	cents	Number	\$	\$	cents	Number
1940.....	1,679	31.84	63.3	50.3				
1941.....	1,736	33.88	67.8	50.0				
1942.....	1,904	37.53	77.2	48.6				
1943.....	1,983	38.29	79.1	48.4	1,424	27.51	59.3	46.4
1944.....	1,999	38.90	82.6	47.1	1,313	25.54	55.0	46.4
1945.....	2,000	38.66	82.2	47.1	1,325	24.37	54.2	44.9

Table 82.—Specified Data Relating to the Copper-Gold Silver Mining Industry, 1930-1945(*)

Year	Wage-earners	Wages paid	Average per capita wages paid	Salaried employees	Salaries paid	Total salaries and wages
	Number	\$	\$ (†)	Number	\$	\$
PRODUCING MINES—						
1930.....	4,634	7,394,741	1,596	195	536,482	7,931,223
1931.....	2,901	4,140,890	1,427	160	465,603	4,606,493
1932.....	2,900	3,392,322	1,170	131	328,079	3,720,401
1933.....	2,590	3,550,417	1,371	123	275,650	3,826,067
1934.....	2,878	4,357,517	1,514	168	413,127	4,770,644
1935.....	2,946	4,144,095	1,407	207	473,988	4,618,083
1936.....	3,328	4,608,774	1,385	308	708,200	5,316,974
1937.....	4,618	7,019,595	1,520	436	1,058,082	8,077,677
1938.....	5,051	7,694,141	1,523	418	1,075,014	8,769,155
1939.....	5,401	8,498,360	1,573	470	1,126,561	9,624,921
1940.....	5,605	9,434,060	1,683	479	1,313,509	10,747,569
1941.....	5,324	9,249,863	1,737	524	1,428,993	10,678,856
1942.....	4,945	9,442,054	1,909	608	1,524,584	10,966,638
1943.....	5,042	9,931,712	1,970	629	1,764,200	11,695,912
1944.....	4,539	8,927,879	1,967	602	1,721,494	10,649,373
1945.....	3,936	7,788,083	1,966	583	1,608,225	9,396,308
Total.....		109,574,503			15,821,791	125,396,294
Non-PRODUCING MINES—						
1930.....	775	1,037,743		90	187,793	1,225,536
1931.....	224	256,204		66	95,620	351,824
1932.....	33	27,439		12	22,787	50,226
1933.....	92	81,998		36	30,713	112,711
1934.....	87	65,485		36	33,672	99,157
1935.....	248	367,685		29	54,428	422,113
1936.....	84	119,084		18	37,267	156,351
1937.....	84	126,155		26	36,782	162,937
1938.....	93	129,246		15	23,064	152,310
1939.....	186	256,999		26	38,671	295,670
1940.....	18	18,746		13	11,512	30,258
1941.....	12	10,449		6	5,718	16,167
1942.....	71	107,532		22	23,242	130,774
1943.....	51	79,818		26	31,097	110,915
1944.....	14	20,348		20	40,350	60,698
1945.....	97	180,861		42	86,443	267,304
Total.....		2,885,792			759,159	3,644,951

(*) Not including smelters or refineries.

(†) Including any bonus paid.

Table 83.—Specified Data Relating to the Copper-Gold-Silver Mining Industry, 1930-1945 (a)

Year	Producing mines						Non-producing mines			
	Electricity purchased	Total cost of purchased fuel and power used	Hydraulic turbines used	Process supplies used	Freight on ore, etc., shipped	Smelter treatment charges (b)	Electricity purchased	Total cost of purchased fuel and power used	Hydraulic turbines used	Process supplies used
	k.w.h.	\$	h.p.	\$	\$	\$	k.w.h.	\$	h.p.	\$
1930.....	124,395,046	1,173,447	9,300	(c)	(c)	(c)	731,964	98,815	690	(c)
1931.....	225,088,928	709,614	9,300	(c)	(c)	(c)	311,800	16,888	1,159	(c)
1932.....	127,331,868	446,736	9,300	(c)	(c)	(c)	1,584,700	16,727	609	(c)
1933.....	68,188,303	387,312	9,300	(c)	(c)	(c)	453,000	17,313	609	(c)
1934.....	90,097,659	526,941	9,300	(c)	(c)	(c)	1,108,500	15,729	.....	(c)
1935.....	91,828,181	520,724	9,300	2,892,443	(c)	(c)	1,108,500	13,428	.....	6,689
1936.....	71,134,263	441,132	9,300	3,127,527	(c)	(c)	2,253,803	54,711	.....	28,698
1937.....	199,045,597	871,002	9,300	4,808,804	344,818	9,735,199	.....	30,086	.....	43,341
1938.....	214,930,438	1,049,325	9,300	4,746,830	960,791	13,639,953	5,501,100	50,959	609	96,833
1939.....	247,180,650	1,203,878	8,900	5,839,545	1,582,350	16,587,402	2,119,520	19,645	1,250	46,071
1940.....	270,601,445	1,207,454	8,900	5,812,178	882,633	17,378,032	.....	.....	.....	.....
1941.....	251,488,789	1,264,533	10,520	5,504,530	1,873,728	25,964,492	.....	34	.....	1,425
1942.....	259,238,497	1,333,969	8,900	5,682,271	1,932,958	26,483,998	108,000	4,768	.....	21,184
1943.....	269,523,279	1,413,989	8,900	5,493,375	1,353,139	21,409,079	.....	12,721	.....	12,840
1944.....	262,411,942	1,401,995	8,900	5,170,105	720,920	16,898,032	.....	308	.....	476
1945.....	243,557,533	1,154,097	8,900	4,870,144	1,240,533	13,800,559	443,000	21,819	.....	.....
Total	3,016,042,418	15,196,088	.....	53,647,952	10,891,870	161,896,806	15,723,887	373,951	.....	257,557

(a) Not including smelters or refineries.

(b) Partly conjectural.

(c) Not available.

Table 84.—Details of Fuel and Electricity Used in the Copper-Gold-Silver Mining Industry, 1944 and 1945

Kind	Unit of measure	1944		1945	
		Quantity	Cost at plant	Quantity	Cost at plant
			\$		\$
Bituminous coal (a) From Canadian mines.....	short ton	9,494	90,950	8,068	75,861
(b) Imported.....	short ton	997	13,170	2,056	28,470
Anthracite coal (a) From United States.....	short ton	61	1,110	65	1,190
(b) Other.....	short ton				
Lignite coal.....	short ton	66,680	280,991	53,487	198,811
Coke (for fuel only).....	short ton	300	4,747	94	1,589
Gasoline.....	Imp. gal.	93,574	32,159	93,804	31,184
Kerosene or coal oil.....	Imp. gal.	6,089	1,441	10,096	1,851
Fuel oil and diesel oil.....	Imp. gal.	689,219	95,526	813,998	106,893
Wood (cords of 128 cu. ft. of piled wood).....	cord	673	5,140	268	1,349
Other fuel (charcoal).....	pound	8,889	200	3,305	75
Electricity purchased, including service charges	K.W.H.	262,411,942	876,809	244,000,533	728,643
Total.....			1,402,243		1,175,916
Electricity generated for own use.....	K.W.H.	79,749,693		64,002,589	
Electricity generated for sale.....	K.W.H.	6,493,151	46,799	427,991	6,431
Process supplies consumed (explosives, etc.).....			5,170,581		4,917,595
Grand Total Value of Fuel and Process Supplies Consumed.....			6,572,824		6,093,511

Table 85.—Power Equipment (Including Stand-by or Emergency Equipment) in the Copper-Gold-Silver Mining Industry in Canada, 1945

Description	Ordinarily in Use		In Reserve or Idle	
	Number of units	Total horse power	Number of units	Total horse power
Steam engines.....				
Steam turbines.....	1	10,000	3	7,500
Diesel engines.....	17	4,226	3	710
Gasoline, gas and oil engines, other than Diesel engines.....	20	647	2	245
Hydraulic turbines or water wheels.....	6	8,900		
Electric motors (except motor-generator sets)—				
(a) Operated by purchased power.....	2,775	105,373	193	3,901
Total.....	2,819	129,146	201	12,356
(b) Operated by power generated by above primary units.....	574	18,238	37	2,034
Stationary boilers.....	25	3,898	6	882
Motor-generator sets.....	94	28,305	8	431

Table 86.—Taxes Paid by the Copper-Gold-Silver Mining Industry in Calendar Years 1944 and 1945

	1944	1945
	\$	\$
Dominion Income Tax, including tax on non-operating revenue.....	3,432,927	3,245,130
Dominion Excess Profits Tax.....	5,731,452	6,086,445
Provincial Tax.....	1,289,936	1,617,992
Municipal Tax.....	179,045	305,760
Grand Total Taxes Paid.....	10,633,360	11,255,327

Table 87.—Specified Expenditures by the Copper-Gold-Silver Mining Industry, 1943-1945.

	1943	1944	1945
	\$	\$	\$
Workmen's Compensation.....	423,422	409,782	412,603
Silicosis assessment.....	119,982	86,744	96,004
Unemployment insurance.....	84,818	75,832	66,238
Aggregate cost of all supplies purchased.....	9,466,714	6,065,754	8,314,676
Aggregate cost of plant and equipment purchased.....	1,514,959	989,675	434,764
Cost of buildings, machinery and equipment erected or installed during year..	(*)	1,304,542	424,066

(*) Not recorded.

Table 88.—Cost of Prospecting Conducted by the Copper-Gold-Silver Mining Industry, by Provinces, 1944 and 1945

	1944	1945		1944	1945
	\$	\$		\$	\$
Conducted in—			Conducted in—		
Nova Scotia.....	2,463	1,769	Saskatchewan.....		2,875
New Brunswick.....	4,245	4,525	British Columbia.....	11,128	93,139
Quebec.....	34,602	35,687	Yukon.....	22,642	
Ontario.....	84,935	145,736	Northwest Territories.....		1,399
Manitoba.....	36,589	87,905			
			Total.....	196,604	373,035

Table 89.—Dividends Paid by Specified Copper-Gold-Silver Mining Companies

Name of Firm	Dividends paid in 1945	Total dividends paid to December 31, 1945
	\$	\$
Noranda Mines Ltd.....	8,959,088	107,173,100
Waite Amulet Mines Ltd.....	2,475,000	10,395,000
Amulet Dufault Mines Ltd.....	2,112,000	9,856,000
Sherritt Gordon Mines Ltd.....	293,722	2,702,239
Hudson Bay Mining & Smelting Co. Ltd.....	5,515,946	52,401,487
Britannia Mining & Smelting Co. Ltd.....		11,511,448
Granby Cons. Mining, Smelting & Power Co. Ltd.....	74,964	11,870,214

Table 90.—Ores Mined, Milled, and Concentrates Produced by the Copper-Gold-Silver Mining Industry, 1930-1945

Year	Ore mined	Ore milled	Copper concentrates produced (f)	Zinc concentrates produced	Iron pyrites concentrates produced	Net value of all estimated mine and mill shipments (c)
	tons	tons	tons	tons	tons	\$
1930.....	5,768,664	4,926,431	298,085	72,112	53,453 (a)	15,629,564
1931.....	6,002,865	5,243,382	469,059	63,828	63,293 (a)	15,951,103
1932.....	5,453,173	4,607,659	518,609	76,507	71,945 (a)	11,143,759
1933.....	5,448,690	4,521,301	521,399	88,645	59,354 (a)	7,707,270
1934.....	6,065,662	5,127,189	557,045	81,811	80,684 (a)	8,265,071
1935.....	5,650,665	4,693,387	614,942	96,466	66,700 (a)	16,676,447
1936.....	5,052,222	4,091,570	503,650	101,303	105,669 (a)	19,271,965
1937.....	6,749,809	5,892,031	630,664	116,698	201,494 (b)	30,655,784
1938.....	7,929,434	6,961,188	756,065	123,887	173,444 (b)	34,739,439
1939.....	8,474,855	7,760,725	828,963	105,842	161,238 (b)	32,991,716
1940.....	8,931,291	8,325,979	930,622	126,346	172,500 (b)	34,914,051
1941.....	9,263,071	8,402,656	974,250	157,622	309,050 (b)	36,990,853
1942.....	8,575,626 (d)	7,816,813	858,580	264,739	219,874 (b)	40,730,834
1943.....	8,251,579	7,482,831	914,360	315,670	292,007 (b)	50,774,104
1944.....	7,395,608 (e)	6,873,542	870,726	276,737	257,423 (b)	44,770,863
1945.....	5,914,580 (g)	5,441,121	730,724	229,980	228,618 (b)	44,258,780
Total 16 Years...	110,927,824	98,077,505	11,007,743	2,328,193	2,516,746	445,471,603

(a) Value f.o.b. mine and presumed gross value less freight and treatment charges which were not reported separately by operators prior to 1937.

(b) Gross value reported by operators less only freight and treatment costs deducted by Dominion Bureau of Statistics.

(c) Includes the value of any cyanide precipitate shipped from mills to smelters.

(d) In addition 1,554,164 tons of tailings were retreated.

(e) In addition 1,440,216 tons of tailings were retreated.

(f) Exclusive of copper precipitate in 1943, 1944 and 1945.

(g) In addition 1,403,457 tons of tailings were retreated.

Table 91.—Drilling Completed on Copper-Gold-Silver Deposits in Canada, 1944 and 1945

	Footage Drilled	
	1944	1945
Diamond drilling for exploration (testing only)—		
By mining companies with their own personnel and equipment.....	97,961	76,089
By diamond drilling contractors.....	149,881	319,515
Other diamond drilling—		
Blast hole diamond drilling—		
By mining companies with their own personnel and equipment.....	811,609	517,940
By diamond drilling contractors.....	139,552	310,446
Drilling by percussion or other machines.....	(*) 3,221,786	3,778,401

(*) Not complete as these data are not recorded by some operators.

Table 92.—Ore Reserves of Specified Copper-Gold-Silver Mining Companies (*)

	Tons	Copper	Zinc	Gold	Silver
		per cent	per cent	ounces per ton	ounces per ton
Noranda Mines Ltd., January 1, 1946—					
Indicated above the 2,975 foot level—					
Sulphide ore over 4 per cent copper.....	5,127,000	7.08		0.148	(a)
Sulphide ore under 4 per cent copper.....	15,228,000	0.68		0.197	(a)
Silicious fluxing ore.....	853,000	0.10		0.107	(a)
Capacity of mill: 24 hours.....	3,000				
Waite Amulet Mines Ltd., December 31, 1945—					
Waite Mine—					
Copper ore.....	82,066	4.67		0.04	0.5
Zinc ore.....	10,000		9.5		
Other Waite Amulet ore bodies—					
"F" orebody.....	30,000	3.2	9.9	0.01	1.01
"C" shaft orebodies.....	50,870	1.50	10.66	0.02	4.0
Amulet Dufault—					
Lower "A" orebody.....	2,210,435	6.01	4.26	0.045	1.5
Upper "A" orebody.....	134,167	2.0	6.5	0.07	1.6
Capacity of mill: 24 hours.....	1,800				
Normetal Mining Corp. Ltd., December 31, 1945	(b) 1,399,000	3.53	7.04	0.032	2.53
Capacity of mill: 24 hours.....	750				
Sheritt Gordon Mines Ltd., December 31, 1945					
East orebody—					
Zinc ore.....	33,500	0.85	8.66	0.005	0.40
Copper ore.....	117,500	2.56	2.35	0.030	0.72
West orebody.....	1,908,500	2.66	2.24	0.020	0.67
Capacity of mill: 24 hours.....	750				
Hudson Bay Mining & Smelting Co. Ltd.,					
January 1, 1946.....	26,000,000	2.99	4.24	0.089	1.25
Capacity of mill: 24 hours.....	6,000				
Granby Cons. Mining, Smelting & Power Co.					
Ltd., 1945.....	10,559,000	1.25		(a)	(a)
Capacity of mill: 24 hours.....	4,800				
Britannia Mining & Smelting Co. Ltd.....	(a)				
Capacity of mill: 24 hours.....	6,000				

(a) Not reported.

(b) No allowance for ore below 2750-foot level.

(*) Subject to revision: from companies' annual printed reports.

CHAPTER THREE

THE SILVER MINING INDUSTRY IN CANADA

(a) The Silver-Cobalt Mining Industry; (b) the Silver-Lead-Zinc Mining Industry

Definition of the Industry.—Silver mining in Canada is not a distinct mining industry inasmuch as silver-bearing minerals usually occur in association with other metals of economic value—with lead and zinc; with copper, nickel and arsenic; with lode and placer free gold; in copper-gold and nickel-copper ores, and at Great Bear Lake, N.W.T., with pitchblende. Silver-lead-zinc mining is a very important industry in British Columbia and, to a lesser extent, in the Yukon Territory. In Eastern Canada, lead and zinc ores have been mined in Ontario, Quebec and Nova Scotia.

It is to be noted that, in addition to its recovery from silver-lead ores, zinc is now produced in large quantities from copper-gold-silver ores mined in Quebec, Manitoba and Saskatchewan.

General statistical data contained in this report are essentially those pertaining only to the mining of silver-cobalt and silver-lead-zinc ores but the output figures for specific metals represent the total production from all sources.

(a) The Silver-Cobalt Mining Industry

The mining of silver-cobalt ores in Canada is confined almost entirely to the district of Temiskaming in northern Ontario. Veins containing these metals were discovered at or near the present town of Cobalt in 1903 and shipments of ores from this area have been continuous since 1904. Depletion and exhaustion of ore reserves during recent years have resulted in a relatively great decline in the production of metals from these deposits. In most instances, operations at properties, some of which were prominent as producers in the past, are conducted by lessees and shipments range from one to several hundred tons. The increased demand for cobalt as an alloying metal has, for some years, stimulated operations of a salvage nature at several of the older mines.

In order to encourage the production of cobalt for war requirements, United States and Canadian government agencies co-operated during a considerable period of the war in the purchase of Canadian cobalt ores. Ores thus acquired were consigned in 1942 and 1943 to a United States Government agency stock pile located at Deloro, Ontario. These government purchases were discontinued early in 1944 and no further purchases were made during the year under review.

The number of operators reported as actively engaged in the mining or shipping of silver-cobalt ores in 1945 totalled 8, employees numbered 166 and salaries and wages paid amounted to \$247,203. The gross value of mine and mill shipments was \$152,475. There was no addition to or withdrawal from the stock pile of the Metals Reserve Company located at Deloro, Ontario.

Table 93.—Principal Statistics of the Silver-Cobalt Mining Industry in Canada, 1929-1945

Year	Number of active operators	Number of operating mines	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Value of bullion, ore, concentrates or residues sold
	(a)	(c)	\$		\$	\$	\$
1929.....	27	32	15,820,435	1,149	1,532,333	407,952	3,918,316
1930.....	23	28	12,268,322	1,043	1,488,591	352,844	3,637,181
1931.....	22	26	9,352,520	786	1,149,689	227,467	1,925,593
1932.....	17	20	3,005,872	369	551,255	124,478	1,735,708
1933.....	12	14	3,365,755	242	322,281	83,565	1,071,602
1934.....	15	16	5,102,491	286	361,726	85,685	1,380,318
1935.....	27	28	6,380,731	402	494,791	114,439 (b)	1,070,716
1936.....	24	25	5,946,702	363	458,546	104,372 (b)	915,376
1937.....	23	25	2,655,060	300	394,386	90,134 (b)	540,762
1938.....	34	30	2,696,217	297	386,851	73,549 (b)	288,293
1939.....	36	43	2,461,556	323	412,728	63,486 (b)	553,032
1940.....	48	44	337,080	123	158,024	10,900 (b)	809,263
1941.....	24	14	439,877	132	229,984	40,875 (b)	662,443
1942.....	13	14	358,691	192	283,980	68,349 (b)(d)	600,207
1943.....	20	21	587,039	221	290,654	74,691 (b)(d)	578,861
1944.....	10	11	(e)	165	260,575	48,323 (b)(d)	323,260
1945.....	7	8	(e)	166	247,203	49,553 (b)	82,508

(a) Includes lessees shipping from dumps.

(b) Net value.

(c) Includes properties on which operations were of a salvage nature only.

(d) Includes value of ores consigned to the United States Government stock pile at Deloro, Ontario.

(e) Not recorded in 1944 or 1945.

NOTE.—The cost of process supplies used—explosives, etc.—was recorded for the first time in 1935 and, beginning with 1935, this cost together with the cost of fuel and purchased electricity, freight and smelter charges were deducted from the gross value of sales.

Table 94.—Summary (b) of Operations of Silver-Cobalt Mines and Mills in Canada, 1942-1945

	1942	1943	1944	1945
Number of mines in operation (*).....	14	21	11	11
Ore mined..... tons	25,500	39,184	27,184	30,519
Ore salvaged from surface (c)..... tons	18,532	395	2,189	4,521
Ore treated (milled) (a)..... tons	43,851	39,625	30,190	30,319
Tailings treated..... tons		8,865		
Concentrates produced..... tons	1,415	1,346	862	1,047
Gross value of bullion, ore, concentrates and residues sold. \$ (d)	750,250	721,173	422,860	152,475
Cost of freight..... \$	1,439	4,192	3,138	1,704
Smelter charges..... \$	16,255	15,361	12,330	8,231
Cost of fuel and purchased electricity used..... \$	68,349	74,691	48,323	49,553
Cost of process supplies used..... \$	64,000	48,068	35,809	10,479
Net value of sales..... \$	600,207	578,861	323,260	82,508

(*) All mines located in northern Ontario and includes properties on which the operations consisted only in salvaging of ore from dumps, etc.
(a) Does not include crude ore shipped.
(b) Partly estimated or conjectural as data unobtainable from some shippers.
(c) Complete data not available.
(d) Includes value of ore consigned to United States Government stock pile at Deloro, Ontario.

Table 95.—Mine and Mill Shipments of Canadian Silver-Cobalt Ores and Concentrates, 1944 and 1945

	Gross Weight	Metal Content			
		Silver	Cobalt	Nickel	Copper
	lb.	oz.	lb.	lb.	lb.
1944					
To Canadian smelters and to Government stock pile at Deloro, Ontario.....	1,734,460	489,614	176,813	43,424	16,678
To foreign plants.....	183,143	2,216	25,951	6,006	710
Total.....	1,917,603	491,830	202,764	49,430	17,388
1945					
To Canadian smelters and to Government stock pile at Deloro, Ontario.....	491,701	223,784	30,383	19,260	6,296
To foreign plants.....	860,077		109,123	56,138	
Total.....	1,351,778	223,784	139,506	75,398	6,296

Table 96.—Employees, Salaries and Wages in the Silver-Cobalt Mining Industry, 1939-1945

Year	On Salaries		On Wages		Total employees	Salaries	Wages	Total salaries and wages
	Male	Female	Male	Female				
	Number	Number	Number	Number		\$	\$	\$
1939.....	41	4	278		323	75,730	336,998	412,728
1940.....	17	1	105		123	40,970	117,054	158,024
1941.....	22	3	157		182	60,914	169,070	229,984
1942.....	24	3	165		192	63,722	220,258	283,980
1943.....	34	6	180	1	221	56,570	234,084	290,654
1944.....	20	4	140	1	165	43,960	216,615	260,575
1945.....	14	5	146	1	166	42,267	204,936	247,203

Table 97.—Number of Wage-Earners on Payroll or Time Record at End of Month in the Silver-Cobalt Mining Industry, 1942-1945

Month	1942	1943	1944	1945				
				Mine			Mill	Total
				Surface		Under-ground	Male	
				Male	Female	Male		
January.....	144	170	127	36	1	107	26	170
February.....	109	179	116	31	1	88	23	143
March.....	115	181	121	31	1	90	19	141
April.....	141	177	148	29	1	82	22	134
May.....	179	191	159	35	1	84	14	134
June.....	183	181	159	49	1	71	11	132
July.....	200	176	154	51	1	77	11	140
August.....	200	174	150	63	1	72	11	147
September.....	195	216	133	65	1	71	11	148
October.....	180	167	136	77	1	63	12	153
November.....	172	185	142	71	1	78	12	162
December.....	150	145	145	60	1	79	13	153
Average.....	165	181	141	50	1	81	15	147

COBALT-SILVER ORES DURING 1945

(Contributed by A. A. Cole, Manager, Temiskaming Testing Laboratories, Cobalt, Ontario)

Silver Ores—

Cross Lake Lease.—These lessees have been for some years the largest producers of high-grade silver ore in the district. They operated the O'Brien Mine at Cobalt and Miller Lake—O'Brien at Gowganda until the latter was sold last summer to the Siscoe Gold Mines Ltd. In addition to silver ore they also produced some cobalt ore from the Cobalt mine.

Ausic Mining & Reduction Co. Ltd.—This company has reconditioned the old Silver Cliff mill and operated it for a few months in 1945 on ore from the Genessee and Silver Cliff mines.

Van Tassel Silver Mining Syndicate.—This syndicate has acquired the old Silver Bar Mine. The property has been re-opened and some development done by the new owners; but latterly has been closed down awaiting better markets.

Silco Mines Ltd.—This company has been developing properties in the Gillies limits.

The Smelting of Silver Ores and the Price of Silver—

The Deloro Smelting & Refining Co. Ltd. still continues to be the only plant treating high-grade silver ores from the Cobalt District. The Company runs its silver furnace only when it receives enough ore to make the run worth while. The minimum set by the company is 300 tons. This point was reached and a run was made in March, 1945. Since that time no silver ore shipments have been made. Cross Lake Lease, however, has continued to produce and has accumulated about 60 tons of high-grade ore which it has stockpiled awaiting a higher price for silver. Later developments proved this procedure was justified for on September 21 the United States raised the ceiling price on foreign silver to 71.11 cents. This price, however, was not immediately available to the Canadian silver producers.

"Canada is the only country which has maintained a pre-war price ceiling. Throughout 1945 the silver-using industry continued to be supplied with metal on a 40 cent basis, this figure being the approximate equivalent in Canadian funds of the 35½ cent foreign silver price, which had prevailed in the United States until August 31, 1942, under O.P.A. ceiling. The Dominion's mine production was made available first to the home trade and then to the Royal Canadian Mint; only after these requirements had been satisfied was the excess permitted to be exported under Government licence for sale abroad at prices above the 40 cent level." Settlement with the Cobalt silver ore producers was made on the basis of what was known as the "Pool Price" which was

obtained by combining the total sales for Canadian requirements with silver exports and working out the average price per ounce of silver received. The pool prices for 1945 were:

1st quarter.....	42.68	2nd quarter.....	44.22
3rd quarter.....	43.00	4th quarter.....	44.59

In December the Wartime Prices and Trade Board undertook to modify the existing arrangements. Under the proposed plan which took effect after January 1, 1946, the silver producers in the Cobalt area of Ontario, having their ores smelted and refined at Deloro in 1946, will be paid on the basis of the export price, less the usual smelter charge as in the past.

Cobalt Ores—

The Selanco Mining & Smelting Corporation is the largest producer of cobalt ore in the district. Most of their ore comes from the Agaunico Mine at North Cobalt. They operate their own mill on the old Colonial property and produce about 80 tons of cobalt concentrates per month. As their shipments are taking only a small part of their production their stock pile is constantly increasing and is now well over 1,200 tons. During the year they also purchased several lots of ore from some of the other producers. Two cars have yet to be shipped to the Shepherd Chemical Co. of Cincinnati, Ohio, and then the balance will be held for treatment in the Company's smelter.

The site chosen for the erection of this electric smelter and refining plant is on the T. & N. O. Railway on the shore of the Montreal River about six miles south of the town of Cobalt.

Lawson and University Mines.—Both these mines were operated under leases from the La Rose-Rouyn Mines Ltd., the Lawson by J. H. Sutherland and the University by S. B. Bond. Both are cobalt ore producers but are at present closed down awaiting a betterment of the cobalt market.

Cobalt.—Output of Canadian cobalt comes entirely from cobalt-bearing deposits located in northern Ontario and usually includes the cobalt recovered and sold in the metallic state, the cobalt content of oxides and salts sold and the metal content of cobaltiferous ores exported. No cobalt metal, oxides or salts have been produced in Canada from Canadian ores since 1942 and the 109,123 pounds valued at \$90,026 credited as Canadian cobalt production during the year under review, represents the metal content of Canadian ores exported. Included in these exports is the cobalt content of ores and concentrates reshipped from the stock pile of the Metals Reserve Company, located at Deloro, Ontario. Ores placed on this stock pile are not credited as commercial production until reshipped from Deloro.

Deloro Smelting and Refining Company, Limited, has the only plant in Canada that treats ores for the recovery of cobalt. The plant is located at Deloro, Ontario, and produces cobalt metal, oxides, and salts, chiefly for the British market. For the past three years the company has been treating cobalt residues from Africa and has processed little or no Canadian ores. The Canadian production of cobalt ore from 1942 to 1944 was largely purchased by Deloro Smelting and Refining Company as agent for the Department of Munitions and Supply, acting for Metals Reserve Company of the United States, and was stockpiled for this account. The purchase of these ores for the Metals Reserve Company was discontinued February 22, 1944.

The Bureau of Mines, Ottawa, reported recently that about 75 per cent of the world production of cobalt is used in the metallurgical industry and most of the remainder in the ceramic industry. The metallurgical uses are for high-speed cutting steels; for making stellite or stellite-type alloys, which contain 45 to 50 per cent cobalt, 30 to 37 per cent chromium, and 12 to 17 per cent tungsten. There are various modifications of this composition, but all contain high percentages of cobalt. Stellite is used for cutting metals at high speed and for making permanent magnets. The use of stellite continues to spread and it is of great value in the manufacture of valves for aeroplane engines. Small quantities of cobalt used with other chemicals in nickel-plating solutions are said to produce a bright nickel electro deposit as an undercoating for later chromium plating. A certain amount of cobalt is used in electroplating and as a catalyst. Cobalt oxide is used mainly in the ceramic industry owing to its fine colouring properties. Other compounds of cobalt are used as driers in paints and varnishes.

Since 1904, the first year for which cobalt production was recorded in Canada, there were produced, to the end of 1945, in all forms, 34,526,509 pounds of Canadian cobalt valued at \$33,816,943.

Table 98.—Production of Domestic Cobalt in Canada, 1913-1919 and 1929-1945

Year	Pounds	Year	Pounds
1913.....	1,642,000	1933.....	466,702
1914.....	702,000	1934.....	594,671
1915.....	412,000	1935.....	681,419
1916.....	800,000	1936.....	887,591
1917.....	674,000	1937.....	507,064
1918.....	760,000	1938.....	459,226
1919.....	596,000	1939.....	732,561
		1940.....	794,359
		1941.....	263,257
1929.....	929,415	1942.....	(*) 83,871
1930.....	694,163	1943.....	(*) 175,961
1931.....	521,051	1944.....	(*) 36,283
1932.....	490,631	1945.....	109,123

(*) Exclusive of cobalt in ores placed on United States Government stock pile at Deloro, Ontario, but includes metal in ores reshipped from this stock pile.

Table 99.—Production in Canada From Domestic Ores, Imports and Exports of Cobalt, 1944 and 1945

		1944		1945	
		Quantity	\$	Quantity	\$
PRODUCTION— (In terms of metallic cobalt and cobalt in oxides and salts sold and in ores exported).....	pounds	(*) 36,283	34,106	109,123	90,026
IMPORTS— Cobalt ore.....	pounds	3,676,400	1,327,755	2,390,000	869,415
Oxide of cobalt.....	pounds	1,720	2,595	16,072	22,390
EXPORTS— Cobalt, contained in ore.....	pounds	25,900	24,379	65,000	57,119
Cobalt, metallic.....	pounds	1,009,068	1,665,984	583,334	954,257
Cobalt, alloys.....	pounds	176,589	789,202	321,047	1,247,249
Cobalt oxides and cobalt salts.....	pounds	462,656	829,469	555,522	975,035

(*) Exclusive of cobalt in ores placed on United States Government stock pile at Deloro, Ontario, but includes metal in ores reshipped from this stock pile.

Table 100.—World Production of Cobalt
(in pounds)

(American Bureau of Metal Statistics)

Country	1943	1944	1945
Canada (a).....	175,961	36,283	109,123
Burma (b).....			
Northern Rhodesia (c).....		2,087,000	1,498,000
Belgian Congo (c).....	4,544,000	4,138,000	7,500,000
French Morocco.....	476,000	536,000	600,000

(a) Metal recovered from smelter products plus cobalt contained in cobalt residues exported. (b) Estimated cobalt content of nickel speiss. (c) Cobalt content of alloys.
Production in Canada in 1946 was 73,900 lb.
Cobalt alloys are produced by electric smelting by the Union Miniere du Haut Katanga at Jadotville-Panda, in two forms; viz., a white alloy containing 40% cobalt and a red alloy containing 5-6%.
The consumption of metallic cobalt in the United States in 1945 was 3,411,000 lb. In 1946 it was 2,600,000 lb. This consumption is entirely for steel alloys, magnets and magnet steel being a major use.
At the end of 1946 OMR had 420,000 lb. of cobalt metal in stock and about 3,000,000 lb. of cobalt in ore, all of which was in the United States, except 645,000 lb. at Deloro, Ont., Canada.

Arsenic.—Production of arsenic (As₂O₃) from domestic ores during 1945 was 2,045,730 pounds compared with 2,627,022 pounds produced in 1944. The value of production was \$130,909 for 1945 and \$180,866 for 1944. The major portion, about 90%, had its origin in Quebec, where the Beattie Gold Mines produces refined arsenic and the O'Brien Gold Mines recovers crude arsenic which is shipped to the Deloro smelter for refining. Some of the production came

from silver-cobalt ores treated at the Deloro plant. The auriferous quartz ores exported to the United States from British Columbia mines contain considerable amounts of arsenic but no data are available on the possible recovery of this arsenic and since the Canadian gold mines receive no payment for the arsenic content, it is not credited as commercial production.

Table 101.—Production in Canada, Imports and Exports of Arsenic, 1944 and 1945

	1944		1945	
	Quantity	Value	Quantity	Value
	Pounds	\$	Pounds	\$
PRODUCTION—				
White arsenic.....	2,627,022	180,866	2,045,730	130,909
IMPORTS—				
Arsenic acid.....	4,202,829	156,652	5,013,269	185,133
White arsenic (arsenious oxide).....	2,405	1,740		
Sulphide of arsenic.....				
Soda, arseniate of, binarsenate.....	86,475	24,488	47,250	16,980
Arsenate of lead.....				
Arsenate of lime.....			31,398	2,453
Total.....		182,889		204,566
Exports—Arsenic (*) Total.....	5,997,500	306,891	6,070,100	282,718

(*) Includes arsenic content in gold ores exported from British Columbia.

Table 102.—Production in Canada, Imports and Exports of Arsenic, 1942-1945

Year	Production(*)	Imports	Exports	
			Refined	Crude
			(Pounds)	
1942.....	7,853,123	2,082	2,204,889	5,844,611
1943.....	3,153,538	400	2,358,400	199,358
1944.....	2,627,022	2,405	2,016,000	
1945.....	2,045,730		1,519,697	

(*) Crude and refined.

Table 103.—Consumption of Arsenious Oxide and Arsenic Acid in the Manufacture of Canadian Insecticides, 1932-1945

Year	Pounds	\$	Year	Pounds	\$
1932.....	1,721,044	69,250	1939.....	4,287,435	132,584
1933.....	3,116,401	110,011	1940.....	3,607,444	122,265
1934.....	4,709,443	168,185	1941.....	5,707,499	212,687
1935.....	2,736,089	86,983	1942.....	6,106,887	273,919
1936.....	3,368,956	106,132	1943.....	4,807,049	211,998
1937.....	3,296,559	102,651	1944.....	4,697,120	208,976
1938.....	3,029,145	93,873	1945.....	5,817,444	258,293

NOTE.—In addition, the following calcium arsenate was used: 1940, 342,452 pounds valued at \$21,671; 1941, 509,381 pounds at \$34,704; 1942, 394,978 pounds worth \$26,773; 1943, 383,059 pounds at \$26,373, and 597,741 pounds at \$40,345 in 1944. Year 1945 used 611,046 pounds, valued at \$40,116.

Table 104.—Consumption of Refined Arsenic in Canada, 1942-1945

	1942	1943	1944	1945
	(Pounds)			
Glass.....	359,239	135,399	193,530	303,246
Insecticides (*).....	494,000	333,178	131,978	340,000
White metals.....	49,358	60,959	60,902	62,000
Miscellaneous.....	6,291	7,662	7,800	8,000
Total Accounted For.....	908,888	537,198	394,210	713,246

(*) Does not include arsenic acid (As₂O₅) imported for use in making insecticides, as follows:

1942.....	5,612,887 lb.	1944.....	4,565,142 lb.
1943.....	4,594,034 lb.	1945.....	5,667,053 lb.

(b) THE SILVER-LEAD-ZINC MINING INDUSTRY

In 1945 the silver-lead-zinc mining industry of Canada reported 19 operators or firms as being engaged in the mining, exploration or development of silver-lead-zinc deposits. Employees numbered 2,485 and salaries and wages paid amounted to \$5,473,582. The cost of explosives and other process supplies consumed totalled \$1,426,479 and fuel and electricity used was recorded at \$516,972. The gross value of production, as reported by the entire industry, totalled \$27,101,464 and the net value, deducting fuel, electricity, supplies, freight and treatment charges, was \$23,167,203.

Table 105.—Principal Statistics of the Silver-Lead-Zinc Mining Industry(*) In Canada, 1935-1945

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Value of ores and concentrates sold (b)
	(a)	(a)	\$		\$	\$	\$
1935.....	69	70	16,596,941	1,657	2,431,110	438,126	10,553,086
1936.....	88	89	19,372,600	1,870	2,917,832	680,677	13,814,645
1937.....	128	130	29,637,739	2,226	3,914,643	845,898	22,740,582
1938.....	107	108	30,386,714	1,640	3,027,915	702,571	18,483,945
1939.....	82	83	23,664,620	1,646	2,803,057	667,661	13,555,609
1940.....	82	83	19,969,198	1,585	3,052,532	468,157	16,439,530
1941.....	63	64	17,717,334	1,666	3,452,199	610,168	20,653,212
1942.....	44	44	19,484,442	2,185	4,730,370	791,772	23,504,642
1943.....	31	32	20,603,191	3,097	6,423,724	986,519	21,932,644
1944.....	20	20	(c)	2,769	5,810,290	866,231	16,802,759
1945—							
Quebec.....	5	5	(c)	625	1,160,625	195,018	2,221,391
Ontario.....			(c)				
British Columbia.....	13	13	(c)	1,858	4,310,677	621,954	20,632,011
Yukon.....	1	1	(c)	2	2,280		13,801
Total.....	19	19		2,485	5,473,582	816,972	22,867,203

(*) Includes data relating to mining of any silver-pitchblende ores in the Northwest Territories.

(a) Usually includes a number of small shippers from whom no particulars were received relating to wages, etc.

(b) The value of fuel, purchased electricity, process supplies, freight and treatment charges have been deducted.

(c) Data not recorded since 1943.

Table 106.—Ore Mined and Milled in the Silver-Lead-Zinc Mining Industry in Canada, 1944 and 1945

	Yukon and Northwest Territories	British Columbia	Quebec and Ontario	Canada
1944—Ore mined..... ton	101	2,359,839	551,884	2,911,824
Ore milled..... ton		2,355,675	549,891	2,905,566
Concentrates produced—Lead..... ton	4	201,417	9,831	211,252
Zinc..... ton		286,754	64,763	351,517
Pitchblende-silver..... ton	(*)			(*)
Gold precipitate..... ton			18	18
1945—Ore mined..... ton	93	2,605,238	481,352	3,086,683
Ore milled..... ton		2,603,703	480,822	3,084,525
Concentrates produced—Lead..... ton	2	231,043	9,037	240,082
Zinc..... ton		304,242	49,895	354,137
Pitchblende-silver..... ton				(*)
Gold precipitate..... ton			13	13

(*) Data not available for publication.

Table 107.—Destination of Shipments From Silver-Lead-Zinc Mines of Canada, 1944 and 1945

	Tons shipped	Gross value at shipping point	Total metal content as determined by settlement assay			
			Gold fine oz.	Silver fine oz.	Lead pounds	Zinc pounds
1944		\$				
To Canadian smelters—						
Lead ore.....	1,440	131,446	110	292,413	162,521	16,920
Lead concentrates.....	202,014	9,294,564		4,087,122	272,917,775	21,932,674
Pyrites concentrates.....						
Zinc concentrates (*).....	256,303	5,218,329		535,010	27,172,583	247,806,425
Dry ore.....	700	37,415	494	48,814	20,465	27,071
Total.....	460,457	14,681,854	604	4,963,359	300,273,344	269,783,090
To Foreign smelters—						
Lead ore.....	97	19,045	2	26,976	106,144	
Lead concentrates.....	15,178	1,192,527	3,562	1,094,099	15,294,423	
Zinc concentrates (*).....	96,029	4,831,603	47	93,490	47,078	106,422,436
Gold precipitates.....	18	566,928	9,940	376,353		
Total.....	111,322	6,610,103	13,551	1,590,918	15,447,645	106,422,436
Grand Total (Gross).....		21,291,957				
Cost of freight.....		1,070,103				
Cost of fuel and purchased electricity.....		860,231				
Smelter charges.....		806,777				
Cost of process supplies.....		1,752,087				
Net Value.....		16,802,759				
1945						
To Canadian smelters—						
Lead ore.....	1,113	91,797	51	202,394	99,539	1,737
Lead concentrates.....	228,009	13,229,040		4,519,559	316,116,514	22,778,061
Pyrites concentrates.....						
Zinc concentrates (*).....	281,032	8,452,888		585,376	28,848,207	272,777,802
Dry ore.....	311	15,817	98	29,959	2,178	
Total.....	510,465	21,789,542	149	5,337,288	345,066,438	295,557,600
To Foreign smelters—						
Lead ore.....	221	41,618	4	41,319	188,420	1,958
Lead concentrates.....	12,073	1,051,115	2,602	756,797	12,289,803	87,541
Zinc concentrates (*).....	73,105	3,593,571		80,983	8,987	81,738,255
Gold precipitate.....	13	625,618	11,690	270,838		
Total.....	85,412	5,311,922	14,296	1,149,937	12,487,210	81,827,754
Grand Total (Gross).....		27,101,464				
Cost of freight.....		1,255,218				
Cost of fuel and purchased electricity.....		816,972				
Smelter charges.....		735,592				
Cost of process supplies.....		1,426,479				
Net Value.....		22,867,203				

(*) Does not include any zinc concentrates produced from copper-gold-zinc ores in Quebec, Manitoba, Saskatchewan or British Columbia.

Note.—In addition to the metals contained in shipments listed in Table 107, there are considerable quantities of lead and silver contained in ores shipped from certain gold mines in British Columbia. Cadmium, bismuth, antimony, tin and sulphur are also recovered from these ores (silver-lead-zinc).

Table 108.—Taxes Paid in 1944 and 1945 by Silver-Lead-Zinc, Nickel-Copper and Copper-Gold-Silver Mining and Smelting Companies (*)

Tax Paid	1944	1945
	\$	\$
Dominion income tax.....	9,947,447	9,782,110
Dominion excess profits tax.....	13,610,741	14,544,969
Provincial tax.....	2,737,249	2,893,782
Municipal tax.....	739,680	719,178

(*) Subject to revision.

Table 109.—Employees, Salaries and Wages in the Silver-Lead-Zinc Mining Industry, 1939-1945

Year	On salaries		On wages		Total employees	Salaries	Wages	Total salaries and wages
	Male	Female	Male	Female				
	Number	Number	Number	Number		\$	\$	\$
1939.....	242	29	1,375		1,646	466,721	2,336,336	2,803,057
1940.....	224	20	1,341		1,585	519,705	2,532,827	3,052,532
1941.....	217	22	1,427		1,666	526,818	2,925,381	3,452,199
1942.....	281	27	1,877		2,185	711,770	4,018,600	4,730,370
1943.....	359	48	2,646	44	3,097	940,099	5,483,625	6,423,724
1944.....	318	56	2,336	59	2,769	920,827	4,889,463	5,810,290
1945.....	309	57	2,068	51	2,485	935,838	4,537,744	5,473,582

Table 110.—Number of Wage-Earners, by Months, in the Silver-Lead-Zinc Mining Industry, 1944 and 1945

Month	1944	1945					
	Total	Mine			Mill		Total
		Surface		Under-ground	Male	Female	
		Male	Female	Male			
January.....	2,655	449	23	1,437	405	38	2,352
February.....	2,649	448	23	1,432	402	38	2,343
March.....	2,556	450	21	1,310	384	39	2,204
April.....	2,485	420	22	1,222	391	39	2,094
May.....	2,442	412	21	1,220	404	44	2,101
June.....	2,333	439	13	1,157	417	41	2,067
July.....	2,302	481	13	1,122	396	41	2,053
August.....	2,247	470	11	1,075	384	37	1,977
September.....	2,189	432	12	1,049	413	33	1,939
October.....	2,199	457	13	1,173	392	31	2,066
November.....	2,327	450	13	1,226	404	29	2,122
December.....	2,323	425	11	1,223	397	.....	2,056
Average.....	2,395	446	17	1,221	401	34	2,119

Table 111.—Total Cost of Prospecting Conducted in Provinces by Silver-Lead-Zinc Mining and Smelting Companies, 1945

	\$		\$		\$
N.S.....	1,770	Ont.....	44,838	B.C.....	138,680
N.B.....	4,525	Man.....	17,061	Yukon.....	18,902
Que.....	35,084	Sask.....	21,324	N.W.T.....	39,922
Total.....					322,106

NOTE.—Prospecting includes the search for new mineral deposits on the surface and preliminary exploration.

Table 112.—Other Expenditures by the Silver-Lead-Zinc Mining and Smelting Companies, 1945

	1945
	\$
Workmen's compensation.....	245,207
Silicosis assessment.....	139,538
Unemployment insurance.....	80,242
Aggregate cost of all supplies purchased.....	2,543,495
Aggregate cost of plant and equipment purchased.....	458,840
Cost of buildings, machinery and equipment erected or installed during the year.....	161,368

Table 113.—Drilling Completed on Silver-Lead-Zinc Deposits in Canada, 1944 and 1945

	Footage Drilled	
	1944	1945
Diamond drilling for exploration and testing—		
By mining companies with their own personnel and equipment.....	1,283	4,100
By diamond drilling contractors.....	86,466	53,366
Other diamond drilling—		
Blast hole diamond drilling:		
By mining companies with their own personnel and equipment.....	280,447	272,508
By diamond drilling contractors.....	(*) 2,660,574	(*) 1,538,711
Drilling by percussion or other machines.....		

(*) Not complete as records are unobtainable at certain mines.

SILVER

Production of fine new silver from all types of Canadian ores totalled 12,942,906 troy ounces valued at \$6,083,166 in 1945 compared with 13,627,109 troy ounces worth \$5,859,656 in 1944. The average estimated price of the fine metal in Canadian funds was 47 cents per troy ounce in 1945 as against 43 cents in 1944. Of the total Canadian production in 1945, the British Columbia mines contributed 5,620,323 ounces, Ontario 3,185,369 ounces, Quebec 1,010,298 ounces, Saskatchewan 1,426,457 ounces, Manitoba 533,883 ounces, with smaller quantities from the Yukon, Northwest Territories and Nova Scotia. Production of silver in Canada since 1887, the first year for which data are available, to the end of 1945, totalled 893,862,834 troy ounces valued at \$500,648,992.

Table 114.—Production of New Primary Silver (From All Ores) in Canada for Years Specified, 1887-1945

Year	Ounces	Cents per ounce	Year	Ounces	Cents per ounce
1887.....	355,083	98.00	1931.....	20,562,247	29.87
1891.....	414,523	98.00	1932.....	18,347,907	31.67
1896.....	3,205,343	67.06	1933.....	15,187,950	37.83
1901.....	5,539,192	58.95	1934.....	16,415,282	47.46
1906.....	8,473,379	66.79	1935.....	16,618,558	64.79
1910 (*).....	32,869,264	53.49	1936.....	18,334,487	45.13
1911.....	32,559,044	53.30	1937.....	22,977,751	44.88
1916.....	25,459,741	65.66	1938.....	22,219,195	43.48
1919.....	16,020,657 (†)	111.122	1939.....	23,163,629	40.49
1920.....	13,330,357	100.90	1940.....	23,833,752	38.25
1925.....	20,228,988	69.06	1941.....	21,754,408	38.26
1927.....	22,736,698	56.37	1942.....	20,695,101	42.17
1929.....	23,143,261	52.99	1943.....	17,344,569	45.25
1930.....	26,443,823	38.15	1944.....	13,627,109	43.0
			1945.....	12,942,906	47.0

(*) Year of maximum output.

(†) Highest price per ounce recorded since 1887.

Refined silver produced in Canada during 1945 totalled 10,890,402 fine troy ounces compared with 12,021,146 fine troy ounces in 1944.

Table 115.—Silver Production in Canada According to Nature of Ores, by Provinces, 1945

Province	Crude placer gold	Auriferous quartz ores	Copper-gold-silver ores	Nickel-copper ores	Silver-lead-zinc ores	Silver-cobalt and other ores	Total
	oz.	oz.	oz.	oz.	oz.	oz.	oz.
Nova Scotia.....		112					112
Quebec.....		113,757	1,182,343		853,470		2,149,570
Ontario.....		973,891		1,735,143		476,335	3,185,369
Manitoba.....		6,036	527,847				533,883
Saskatchewan.....			1,426,457				1,426,457
Alberta.....	1						1
British Columbia.....	2,266	113,239	132,304		(†) 5,372,514		5,620,323
Northwest Territories.....		2,033					2,033
Yukon.....	6,282				18,876		25,158
Canada.....	8,549	1,209,068	3,268,951	1,735,143	6,244,860	476,335	12,942,906

(†) Contains a relatively small quantity recovered from gold ores.

Table 116.—Production of Silver in Canada, by Provinces, and Method of Computation, 1944 and 1945

	1944		1945	
	Quantity	Value	Quantity	Value
		\$		\$
NOVA SCOTIA—				
In gold bullion.....	188	81	112	53
QUEBEC—				
In anode copper.....	1,255,790	539,990	1,149,089	540,072
In gold bullion made and in concentrates exported.....	1,244,891	535,303	1,000,481	470,226
Total.....	2,500,681	1,075,293	2,149,570	1,010,298
ONTARIO—				
In silver recovered in Canada from cobalt ores.....	684,092	294,160	476,335	223,877
In gold bullion.....	278,413	119,717	288,204	135,456
In blister copper.....	1,812,447	779,352	1,627,984	765,152
In ores, concentrates, residues, matte, etc., exported.....	368,323	158,379	792,846	372,638
Total.....	3,143,275	1,351,608	3,185,369	1,497,123
MANTOBA—				
In blister copper.....	519,707	223,474	527,847	248,088
In gold bullion (gold mines) and ores exported.....	50,166	21,571	6,036	2,837
Total.....	569,873	245,045	533,883	250,925
SASKATCHEWAN—				
In blister copper.....	1,735,773	746,382	1,426,457	670,435
In gold bullion and in crude alluvial gold.....				
Total.....	1,735,773	746,382	1,426,457	670,435
ALBERTA—				
In alluvial gold.....	4	2	1	
BRITISH COLUMBIA—				
In alluvial gold.....	2,000	860	2,266	1,065
In gold bullion.....	17,725	7,622	18,628	8,755
In blister and anode copper, etc., exported.....	5,611,847	2,413,094	5,599,429	2,631,732
Total.....	5,631,572	2,421,576	5,620,323	2,641,552
YUKON—				
In alluvial gold.....	5,124	2,203	6,282	2,952
In silver-lead ores exported.....	26,942	11,535	18,876	8,872
Total.....	32,066	13,738	25,158	11,824
NORTHWEST TERRITORIES—				
In pitchblende-silver ores shipped to smelters (*) and in gold bullion.....	13,877	5,881	2,033	956
Canada—Total.....	13,627,109	5,859,656	12,942,906	6,083,166

(*) Complete data relating to recovery of silver from pitchblende ores are not available since 1942.

NOTE.—For 1945, silver was valued at 47 cents per fine ounce, the average price of domestic sales and sales on the New York market adjusted and expressed in Canadian funds; for 1944, the corresponding price was 43 cents.

Table 117.—Source of Silver Production in Canada by Percentages, 1940-1945

Source	1940	1941	1942	1943	1944	1945
In silver-cobalt ores.....	5.38	2.6	4.13	0.81	5.05	3.68
In base bullion (a).....	(b) 44.39	45.3	46.16	45.58	35.52	39.51
In gold ores (bullion and placer).....	3.60	4.1	3.71	3.07	3.21	3.38
In blister and anode copper (c).....	27.62	31.8	34.28	37.28	39.07	36.56
In matte, copper ores and silver-lead ores, etc., exported (other than silver-cobalt ores).....	19.01	16.2	11.72	13.26	17.15	16.87
	100.0	100.0	100.0	100.0	100.0	100.0

(a) Chiefly from silver-lead ores.

(b) Includes silver recovered in Canada from pitchblende-silver ores.

(c) Made from copper-gold-silver and nickel-copper ores.

Table 118.—Production of New Primary Silver in Canada, by Months, 1945 and 1946

Month	1945	1946 (*)
	ounces	ounces
January.....	1,032,679	1,204,506
February.....	964,449	1,041,585
March.....	1,214,945	1,165,684
April.....	1,067,862	1,055,917
May.....	1,213,710	1,037,921
June.....	1,113,656	1,174,600
July.....	963,561	1,265,821
August.....	1,069,038	1,185,906
September.....	975,250	953,495
October.....	1,049,562	929,274
November.....	1,110,330	842,279
December.....	1,167,814	1,013,438
Total—Calendar Year.....	12,942,906	12,870,426

(*) Subject to revision.

Table 119.—Production of Silver Bullion in Canada, 1942-1945 (fine ounces)

1942.....	17,390,000	1944.....	12,020,000
1943.....	15,870,000	1945.....	10,890,000

Table 120.—Estimated Consumption of Fine Silver in Canada for Industrial Purposes, 1936-1945

	In anodes for plating	In making sterling silver and other silver alloys (except lead- silver alloy)	In making silver nitrate	In lead-silver alloys	Miscellaneous	Total
1936.....	500,000	300,000	725,000	Not available	100,000	1,625,000
1937.....	600,000	450,000	690,000		150,000	1,890,000
1938.....	580,000	660,000	750,000		150,000	2,140,000
1939.....	750,000	470,000	615,000		250,000	2,085,000
1940.....	600,000	600,000	665,000		200,000	2,065,000
1941.....	720,000	1,200,000	790,000		250,000	2,960,000
1942.....	800,000	1,600,000	840,000	240,000	250,000	3,730,000
1943.....	800,000	1,620,000	890,000	350,000	300,000	3,960,000
1944.....	900,000	2,650,000	890,000	180,000	360,000	4,980,000
1945.....	960,000	3,740,000	1,040,000	130,000	410,000	6,280,000

NOTE.—Amounts used for coinage not included in above figures.

Table 121.—Imports Into Canada and Exports of Silver and Silver Products, 1944 and 1945

	1944		1945	
	Quantity	Value	Quantity	Value
	oz.	\$	oz.	\$
IMPORTS—				
Silver, unmanufactured.....			1,796	1,407
Silver, manufactures of, n.o.p.....		36,296		57,423
Toilet articles of which the most important component, in value, is sterling silver.....		53		4,427
Total.....		36,349		63,357
EXPORTS—				
Silver contained in ore, concentrates, etc.....	2,389,739	1,170,475	2,232,405	1,153,196
Silver bullion (Canadian).....	3,577,243	1,762,944	2,723,698	1,443,814
Silver manufactures.....		208,387		284,639
Total.....		3,141,806		2,881,649

Table 121.—Silver Production of the World (American Bureau of Metal Statistics)—
Fine troy ounces

	1940	1944	1945
NORTH AMERICA—			
United States (inc. Philippine Islands).....	67,013,000	37,370,000	29,332,000
Canada.....	23,833,752	13,627,109	12,778,000
Mexico.....	82,638,167	63,000,000	60,000,000
Newfoundland.....	1,494,077	1,163,000	1,076,000
Total North America.....	174,978,996	115,160,109	103,186,000
CENTRAL AMERICA AND WEST INDIES.....	4,600,000	3,716,300	3,600,000
SOUTH AMERICA—			
Argentina.....	2,873,000	1,695,000	2,760,000
Bolivia.....	5,626,250	6,797,378	6,687,200
Chile.....	1,506,314	996,521	825,419
Colombia.....	260,310	197,318	168,699
Ecuador.....	105,000	376,565	314,000
Peru.....	19,366,251	15,832,075	15,000,000
Other South America.....	50,000	50,000	50,000
Total South America.....	29,787,425	25,944,857	25,805,318
EUROPE—			
Czechoslovakia.....	870,000	675,000	
France.....	393,870		
Great Britain.....	81,496		
Norway.....	302,210	167,180	154,300
Romania.....	500,204		
Spain.....	1,050,341	777,998	
Sweden.....	1,115,316	1,470,000	1,230,000
Australia.....	15,412,581	9,365,726	9,400,000
New Guinea.....	199,084		
New Zealand.....	415,330	264,300	
ASIA—			
India and Burma.....	6,080,000		
Netherlands Indies.....	1,499,544		
Turkey.....	575,000		
AFRICA—			
Algeria.....	47,614		
Rhodesia.....	266,216	103,800	96,000
Transvaal, Cape Colony and Natal.....	1,292,284	1,213,051	
Belgian Congo.....	2,256,930	2,608,973	2,500,000
French Morocco.....	294,108		
Southwest Africa.....	381,500		
Tunis.....	41,056		

NOTE.—World totals are not shown as production from Russia, Siberia, Japan, Korea and some other countries is not known.

LEAD

Output of new lead totalled 346,994,472 pounds in 1945 compared with 304,582,198 pounds in 1944, these figures representing the lead in base bullion produced in Canada plus the lead content in ores exported. The production of new refined lead was 326,206,000 pounds in 1945 and 285,162,139 pounds in 1944.

Lead production in Canada comes from the silver-lead-zinc mines in British Columbia and from the zinc-lead mines in Quebec and Ontario. The Sullivan mine at Kimberley, British Columbia, operated by the Consolidated Mining and Smelting Company of Canada, is the principal source of production. Concentrates from the mine are treated in the Company's smelter at Trail, British Columbia. All concentrates produced in eastern Canada are exported for further treatment.

The Consolidated Mining and Smelting Company of Canada Ltd., Trail, British Columbia, is the only producer of new refined lead.

Table 122.—Production of New Refined Lead in Canada(*) 1929-1945

Year	Pounds of refined lead produced	Year	Pounds of refined lead produced
1929.....	304,449,673	1937.....	399,394,939
1930.....	304,471,706	1938.....	400,763,914
1931.....	278,448,457	1939.....	381,137,424
1932.....	253,136,522	1940.....	440,175,333
1933.....	254,565,861	1941.....	456,054,164
1934.....	314,467,735	1942.....	486,612,849
1935.....	327,515,277	1943.....	447,742,463
1936.....	363,449,490	1944.....	285,162,139
		1945.....	326,206,000

(*) Includes the electrolytic lead produced from Canadian and foreign ores at Trail, B.C., and also the pig lead from Galletta, Ontario, until 1931.

Table 123.—Production (b) of New Lead in Canada, 1925-1945

Year	Pounds	\$	Average price per pound (Canadian funds)
			cents
1925 (*).....	253,590,578	23,127,460	9.120
1926.....	283,801,265	19,240,661	6.751
1927.....	311,423,181	16,477,139	5.256
1928.....	337,946,638	15,553,231	4.576
1929.....	326,522,566	16,544,248	5.054
1930.....	332,894,163	13,102,635	3.927
1931.....	267,342,482	7,260,183	2.710
1932.....	255,947,378	5,409,704	2.114
1933.....	266,475,191	6,372,098	2.392
1934.....	346,275,576	8,436,658	2.436
1935.....	339,105,070	10,624,772	3.133
1936.....	383,180,909	14,993,869	3.913
1937.....	411,999,484	21,053,173	5.110
1938.....	418,927,660	14,008,941	3.344
1939.....	388,569,550	12,313,768	3.169
1940.....	471,850,256	15,863,605	3.362
1941.....	460,167,005	15,470,815	3.362
1942 (a).....	512,142,562	17,218,233	3.362
1943.....	444,060,769	16,670,041	3.754
1944.....	304,582,198	13,706,199	4.500
1945.....	346,994,472	17,349,723	5.00

(*) Year of maximum value of Canadian lead production. (a) Year of maximum output of Canadian lead.
(b) Primary lead in base bullion produced plus lead in ores exported.

Table 124.—Production in Canada, Imports and Exports of Lead, 1944 and 1945

	1944		1945	
	Pounds	Value	Pounds	Value
		\$		\$
PRODUCTION—				
Quebec.....	10,487,842	471,953	9,229,726	461,486
Ontario.....	1,065,741	47,958	668,762	33,438
British Columbia.....	292,922,888	13,181,530	336,976,468	16,848,823
Yukon.....	105,727	4,758	119,516	5,976
Total.....	304,582,198	13,706,199	346,994,472	17,349,723
IMPORTS—				
Pig and block.....	20,225	2,868	17,117	3,325
Old and scrap.....	6,096	282	36,871	1,045
Bars and sheets.....	10,156	1,504	29,586	3,927
Litharge for storage batteries.....	3,155,100	266,530	3,526,100	315,553
Acetate of lead.....	131,876	16,998	134,521	14,428
Nitrate of lead.....	303,265	36,656	146,362	15,244
Other manufactures.....		382,455		326,102
Pipe lead.....	2,533	528		
Shots and bullets.....	15,721	2,479	1,393	298
Lead arsenate.....				
Lead tetraethyl, compounds of.....	10,033,373	3,378,702	12,030,857	4,056,553
Lead capsules for bottles.....		16,019		126

Table 124.—Production in Canada, Imports and Exports of Lead, 1944 and 1945
—Concluded

	1944		1945	
	Quantity	Value	Quantity	Value
		\$		\$
IMPORTS—Concluded				
Lead pigments—				
Dry white lead.....	336,000	29,890	128,080	11,757
White lead, ground in oil.....	180	23	2,112	150
Dry red lead and orange mineral.....	400,392	39,175	64,289	7,497
Total		4,174,111		4,756,005
EXPORTS—				
Lead, contained in ore.....	19,000,360	650,433	15,668,200	573,690
Pig lead.....	205,759,600	6,394,550	214,583,600	8,603,049
White lead.....	373,000	39,734	785,800	82,215
Total		7,084,717		9,258,954

Production of lead in all forms and from all types of Canadian ores from 1887 to 1945, inclusive, totalled 8,913,918,059 pounds valued at \$385,783,048.

The annual capacity for the production of refined lead at Trail, British Columbia, is approximately 244,000 short tons.

Table 125.—Production of Lead in Canada, by Months, 1945 and 1946

Month	Lead (All Forms)		Refined Lead	
	1945	1946 (*)	1945	1946 (*)
January.....	25,426,948	34,069,146	23,406,000	31,654,000
February.....	24,389,248	30,477,148	22,534,000	26,894,000
March.....	34,899,827	31,287,569	27,666,000	30,278,000
April.....	27,955,975	30,864,007	26,422,000	29,416,000
May.....	25,359,183	30,050,050	27,922,000	30,724,000
June.....	24,982,494	30,927,636	25,116,000	29,254,000
July.....	25,309,517	31,659,550	24,900,000	25,640,000
August.....	27,911,967	30,094,381	25,424,000	26,252,000
September.....	28,951,516	29,041,992	25,438,000	24,980,000
October.....	32,572,398	29,745,248	29,976,000	25,400,000
November.....	34,873,826	22,679,455	32,746,000	24,830,000
December.....	34,361,573	26,556,720	34,656,000	26,210,000
Total	346,994,472	357,452,902	326,206,000	331,532,000

(*) Subject to revision.

Table 126.—Production, Imports, Exports and Domestic Consumption of Refined Lead, 1935-1945

Year	Production in Canada	Domestic consumption	Exports	Imports	Stocks (*) at end of period
(Tons of 2,000 pounds)					
1935.....	163,757	21,540	141,457	49	Not available
1936.....	181,724	23,246	160,875	29	
1937.....	199,697	24,976	176,570	33	
1938.....	200,381	25,791	154,932	28	
1939.....	190,568	27,095	180,736	6	62,653
1940.....	220,087	37,621	151,546	121	
1941.....	228,027	58,403	184,289	148	
1942.....	245,306	58,203	210,752	9	
1943.....	228,871	53,090	154,473	10	34,131
1944.....	142,581	51,671	102,870	10	26,325
1945.....	162,537	62,263	107,291	8	19,900

(*) Producers and consumers.

Table 127.—Consumption of Refined Lead in Canada by Principal End Uses, 1945

Uses	Tons
Solders and alloys.....	24,611
White lead, red lead and litharge.....	10,821
Storage batteries.....	8,275
Foil and collapsible tubes.....	3,324
Ammunition.....	2,634
Iron and steel.....	1,292
Cable covering.....	5,994
Miscellaneous.....	5,312
Total.....	62,263

Table 128.—Lead Production of the World on Mine Basis, 1940, 1944 and 1945 (From the annual report of the American Bureau of Metal Statistics)

	1940	1944	1945
	(tons of 2,000 pounds)		
United States.....	457,392	416,861	388,969
Canada.....	235,925	152,291	172,728
Newfoundland.....	26,235	29,661	27,900
Mexico.....	216,330	197,437	225,875
Total North America.....	935,882	796,250	815,472
Argentina.....	32,738	21,000	20,200
Bolivia.....	12,855	9,973	10,481
Peru.....	55,599	57,541	57,800
Total South America.....	101,192	88,514	88,481
Czechoslovakia.....	3,400	2,400	(a)
France.....	2,695	4,079	(a) 4,000
Germany.....	101,266	(a)	(b)
Great Britain.....	14,771	4,313	4,000
Greece.....			
Italy.....	48,900		
Poland.....	(c)	(c)	(c)
Romania.....	(a)	(a)	(a)
Spain.....	30,000	33,496	28,853
Sweden.....	11,049	(e)	(e)
Yugoslavia.....	75,838	(d)	(a)
Burma.....	88,967		
China, including Hong Kong.....	5,512	(b)	(b)
Turkey.....	900	150	(b)
Australia.....	314,491	197,303	194,100
Algeria.....	2,600	(b)	(b)
French Morocco.....	25,519	10,244	12,185
French Equatorial Africa.....		3,300	3,800
Southwest Africa.....			
Tunis.....	13,536	3,500	10,295
Rhodesia.....	321	1,154	1,926

(a) Unknown.

(b) Unknown, but probably small.

(c) Included with Germany.

(d) Unknown, but mine production continued, about 5,400 tons of galena concentrate being received from Trepcia mines for smelting at Anamur, Turkey, during 1941-44.

(e) Unknown; smelters' production was 8,700 tons in 1944 and 11,500 tons in 1945, probably accounting for the major part of the domestic mine production.

NOTE.—Omitted are Russia, Japan, Manchuria and Korea.

ZINC

Production of primary zinc in all forms totalled 517,213,604 pounds in 1945, a decline of 6 per cent from the 1944 total of 550,823,353 pounds. About 57 per cent of output in 1945 came from the Sullivan mine of the Consolidated Mining and Smelting Company of Canada Limited near Kimberley, British Columbia. The remainder came from the Hudson Bay Mining and

Smelting Company's copper-zinc deposits which straddle the Manitoba-Saskatchewan boundary at Flin Flon; the Sherritt-Gordon copper-zinc mine in northern Manitoba; several small lead-zinc properties in the West Kootenay district in British Columbia; the Normetal and Waite Amulet copper-zinc mines in western Quebec; the Golden Manitou and New Calumet lead-zinc mines in Quebec; and the copper-gold-lead-zinc property of Aldermac Corporation Limited near Sherbrooke, Quebec.

Output of new refined zinc totalled 366,634,000 pounds in 1945 compared with 337,036,000 pounds in 1944. The Consolidated Mining and Smelting Co. of Canada Limited, Trail, B.C., and the Hudson Bay Mining and Smelting Company Ltd., Flin Flon, Manitoba, are the only producers of new refined zinc in Canada. Zinc concentrates produced in eastern Canada are exported to foreign smelters.

The total value of Canadian zinc production since the first recording of Canadian zinc statistics in 1898, and inclusive of 1945, totalled \$313,842,337.

Table 129.—Production (b) of Zinc From All Types of Canadian Ores, 1929-1945

Year	Pounds	\$	Average price per pound (Canadian funds)
			cents
1929.....	197,267,087	10,626,778	5-39
1930.....	267,643,505	9,635,166	3-60
1931.....	237,245,451	6,059,249	2-55
1932.....	172,283,558	4,144,454	2-41
1933.....	199,131,984	6,393,132	3-21
1934.....	298,579,683	9,087,571	3-04
1935.....	320,649,859	9,936,908	3-10
1936.....	333,182,736	11,045,007	3-31
1937.....	370,337,589	18,153,949	4-90
1938.....	381,506,588	11,723,698	3-07
1939.....	394,533,860	12,108,244	3-07
1940.....	424,028,862	14,463,624	3-411
1941.....	512,381,636	17,477,337	3-411
1942.....	580,257,373	19,792,579	3-411
1943 (a).....	610,754,354	24,430,174	4-00
1944.....	550,823,353	23,685,405	4-30
1945.....	517,213,604	33,308,556	6-44

(a) Year of maximum Canadian zinc production.

(b) Comprises refined zinc made in Canada plus zinc in ores, etc., exported.

Table 130.—Canadian Zinc Production (Recoverable) According to Nature of Ores, by Provinces, 1940-1945

Year and Province	Recovered from copper-gold-silver ores	Recovered from silver-lead-zinc and other ores	Total
	Pounds	Pounds	Pounds
1940—Nova Scotia.....		4,755,502	4,755,502
Quebec.....	27,696,721		27,696,721
Manitoba.....	35,103,373		35,103,373
Saskatchewan.....	44,452,595		44,452,595
British Columbia.....		312,020,671	312,020,671
Total Canada.....	107,252,689	316,776,176	424,028,862
1941—Quebec.....	46,389,581		46,389,581
Ontario.....		1,100,949	1,100,949
Manitoba.....	34,879,239		34,879,239
Saskatchewan.....	62,142,258		62,142,238
British Columbia.....		367,869,579	367,869,579
Total Canada.....	143,411,108	368,970,528	512,381,636
1942—Quebec.....	67,064,536	6,876,275	73,940,811
Ontario.....		4,710,394	4,710,394
Manitoba.....	29,908,179		29,908,179
Saskatchewan.....	84,461,520		84,461,520
British Columbia.....		387,236,469	387,236,469
Total Canada.....	181,434,235	398,823,138	580,257,373

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Table 130.—Canadian Zinc Production (Recoverable) According to Nature of Ores, by Provinces, 1940-1945—Concluded

Year and Province	Recovered from copper-gold-silver ores	Recovered from silver-lead-zinc and other ores	Total
	Pounds	Pounds	Pounds
1943—Quebec.....	80,401,837	47,767,973	128,169,810
Ontario.....		3,299,812	3,299,812
Manitoba.....	46,783,873		46,783,873
Saskatchewan.....	96,350,404		96,350,404
British Columbia.....	461,776	335,688,679	336,150,455
Total Canada.....	223,997,890	356,756,464	610,754,354
1944—Quebec.....	78,069,636	59,308,803	137,378,439
Ontario.....		2,429,176	2,429,176
Manitoba.....	45,822,278		45,822,278
Saskatchewan.....	87,130,087		87,130,087
British Columbia.....	1,953,077	276,110,296	278,063,373
Total Canada.....	212,975,078	337,848,275	550,823,353
1945—Quebec.....	64,798,734	47,110,831	111,909,565
Ontario.....		237,799	237,799
Manitoba.....	34,860,754		34,860,754
Saskatchewan.....	75,413,851		75,413,851
British Columbia.....		294,791,635	294,791,635
Total Canada.....	175,073,339	342,140,265	517,213,604

Table 131.—Refined New Zinc Produced in Canada, 1933-1945

Year	Average price (*) per pound	Short tons	Year	Average price (*) per pound	Short tons
	cents			cents	
1933.....	3-21	91,946	1939.....	3-07	175,641
1934.....	3-04	134,917	1940.....	3-41	185,722
1935.....	3-10	149,523	1941.....	3-41	213,608
1936.....	3-31	151,103	1942.....	3-41	215,795
1937.....	4-90	158,542	1943.....	4-00	206,510
1938.....	3-07	171,932	1944.....	4-30	168,518
			1945.....	6-44	183,317

(*) In Canadian funds.

Table 132.—Production of Zinc in Canada, by Months, 1944 and 1945

	Primary Zinc in All Forms (*)		Refined Zinc	
	1944	1945	1944	1945
January.....	49,438,642	49,348,491	32,588,967	33,576,662
February.....	46,551,662	44,378,782	28,214,856	30,659,996
March.....	47,918,693	47,545,212	29,343,399	31,682,750
April.....	45,119,487	43,247,386	27,205,219	28,804,591
May.....	47,499,582	45,282,856	26,250,780	31,880,714
June.....	41,373,262	43,330,713	24,530,795	30,403,825
July.....	42,536,604	45,053,498	25,554,388	31,313,141
August.....	44,843,903	41,388,606	28,716,605	30,178,056
September.....	46,955,939	38,336,609	29,529,962	29,440,325
October.....	43,098,175	38,736,083	25,945,671	29,726,057
November.....	44,718,272	40,480,003	27,132,387	30,020,341
December.....	50,769,132	40,085,365	32,023,801	28,948,438
Total.....	550,823,353	517,213,604	337,036,830	366,634,896

(*) Canadian zinc refineries have an estimated annual capacity of 237,500 tons of cathode zinc.

Table 133.—Production in Canada, Imports and Exports of Zinc, 1944 and 1945

	1944		1945	
	Pounds	Value	Pounds	Value
		\$		\$
PRODUCTION—				
Quebec.....	137,378,439	5,907,273	111,909,565	7,206,976
Ontario.....	2,429,176	104,455	237,799	15,314
Manitoba.....	45,822,278	1,970,358	34,860,754	2,245,033
Saskatchewan.....	87,130,087	3,746,594	75,413,851	4,856,652
British Columbia.....	278,063,373	11,956,725	294,791,635	18,984,581
Total.....	550,823,353	23,685,405	517,213,604	33,308,556
IMPORTS—				
Zinc dust.....	40,200	4,089	45,800	3,872
Zinc in blocks, pigs, bars and rods, and zinc plates, n.o.p....	156,900	26,722	195,400	30,921
Zinc in sheets and strips, and zinc plates for marine boilers	991,600	153,954	3,749,400	488,983
Zinc spelter.....	8,883,000	794,865		
Zinc slugs for dry batteries.....		86		
Zinc white (zinc oxide).....	1,745,535	137,612	2,336,537	180,261
Zinc sulphate.....	986,136	41,278	825,141	49,854
Zinc, chloride of.....	192,935	11,928	270,925	16,532
Zinc, manufactures of, n.o.p.....		351,218		466,842
Lithopone.....	18,999,905	932,787	20,334,132	1,017,275
Total.....		2,454,539		2,254,540
EXPORTS—				
Zinc, manufactures of.....		193,519		132,405
Zinc, contained in ore.....	226,606,900	7,046,844	183,559,700	5,540,384
Zinc, scrap, dross and ashes.....	9,144,200	301,841	13,771,900	577,679
Zinc, spelter.....	191,970,000	7,666,731	243,920,400	14,122,706
Total.....	427,721,100	15,209,035		20,373,174

Table 134.—Consumption of Refined Zinc in Canada, by Industries, 1940-1945

Industry	1940	1941	1942	1943	1944	1945
	(Tons of 2,000 pounds)					
In brass foundries.....	8,425	24,198	38,494	42,158	28,189	16,520
In white metal foundries.....	3,064	9,478	13,290	8,898	5,229	5,566
In iron and steel (chiefly galvanizing).....	19,917	13,118	22,762	16,336	19,400	19,000
In chemicals (zinc oxide, etc.).....	4,173	6,448	8,022	10,344	10,960	12,006
In electrical apparatus.....	803	3,048	1,906	1,614	1,747	1,571
In non-ferrous smelters.....	148	111	181	194	206	200
In ammunition.....	66	127	181	917	1,478	600
In miscellaneous industries.....	317	180	55	138	150	200
Total.....	36,913	56,708	84,891	80,599	67,359	55,663

Table 135.—Production in Canada, Imports, Exports and Domestic Consumption of Refined Zinc, 1935-1945

Year	Production in Canada	Domestic consumption	Exports	Imports	Stocks (*) at end of period
	(Tons of 2,000 pounds)				
1935.....	149,523	14,545	135,459		Not available
1936.....	151,103	13,669	140,211		
1937.....	158,542	23,119	134,189		
1938.....	171,932	18,692	132,212		
1939.....	175,641	22,981	155,995		
1940.....	185,722	36,913	167,073	1	10,028
1941.....	213,608	56,708	141,086		14,903
1942.....	215,795	84,000	152,159	53	9,080
1943.....	206,510	79,920	129,315	18	26,100
1944.....	168,518	69,030	95,985	4	33,220
1945.....	182,266	60,470	121,969		37,700

(*) Producers' and consumers' stocks.

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Table 136.—World's Production of Zinc Spelter (a) 1940, 1944 and 1945 (American Bureau of Metal Statistics)

Country	1940	1944	1945
	(Tons of 2,000 pounds)		
United States (b).....	675,275	869,302	765,480
United States (c).....	48,917	49,037	48,212
Mexico.....	36,817	51,401	53,901
Canada.....	185,809	168,175	183,589
Total North America.....	946,818	1,137,915	1,051,182
Belgium.....	41,654	9,203	4,200
Czechoslovakia.....	(d)	(d)	(d)
France.....	45,093	9,214	8,889
Germany (e).....	350,090	330,690	.....
Great Britain.....	66,167	80,679	69,483
Italy.....	43,362	.....	.....
Netherlands.....	5,566	2,320	.....
Norway.....	18,992	13,309	12,120
Poland.....	(d)	(d)	(d)
Spain.....	13,583	19,313	19,082
Yugoslavia.....	5,500	.....	.....
Peru.....	196	1,611	1,571
Australia.....	81,425	88,458	93,826
French Indo-China.....	5,900	.....	.....
Rhodesia.....	14,773	16,218	17,067

(a) The statistics in this table are the summaries of production as made by the metallurgical works in the several countries.

(b) Production from ores, foreign and domestic.

(c) Production from secondary material.

(d) Included with Germany.

(e) Germany includes production of Czechoslovakia and Poland.

CHAPTER FOUR

THE NICKEL-COPPER INDUSTRY IN CANADA

Statistics relating to the nickel-copper mining, smelting and refining industry, as shown in this report, include those pertaining to the mining of copper-nickel ores, the smelting of these ores in Canada and the production in the Dominion of refined copper, nickel, etc., by the firms constituting this industry.

In addition to production of nickel, copper and the platinum metals, there is an important recovery from these ores of the associated metals—silver, gold, selenium and tellurium; sulphur for the manufacture of sulphuric acid is also salvaged in the gaseous state from waste smelter gases. The total gross value of the various primary products of this industry, considered as a whole, was estimated at \$112,780,854 in 1945 compared with \$121,493,774 in 1944.

Two companies operated both mines and metallurgical plants in the Sudbury area in 1945. The International Nickel Co. of Canada, Limited, conducts smelting operations at Copper Cliff and Coniston, Ontario, while the Falconbridge Nickel Mines, Ltd., smelt their ores at the Falconbridge mine located a few miles east of the town of Sudbury. This last-named company treats its matte in a refinery located at Kristiansand, Norway. Matte produced by the Falconbridge Nickel Mines Ltd. was treated during the war in the Canadian plants of the International Nickel Co. of Canada, Limited, but shipments to Norway were resumed in July of 1945.

The relatively small amount of nickel oxide sometimes produced at Deloro, Ontario, is recovered from silver-cobalt-nickel-arsenic ores mined in northern Ontario. Smelter matter made by the International Nickel Co. of Canada, Limited, is treated in plants located at Clydach, Wales; Huntington, West Virginia; and at Port Colborne and Copper Cliff, Ontario. Converter copper made by the International Nickel Co. is electrolytically refined at Copper Cliff, and refined nickel is produced by the company at Port Colborne. In 1945 the International Nickel Company of Canada Limited shipped ore from the Garson, Creighton, Levaek, Frood, Stobie and Murray mines.

The Ontario Nickel Mines Ltd. operated their property at Moose Lake from June 1 to October 27, 1945. The ore was shipped to the International Nickel Co. of Canada Ltd., at Copper Cliff, for treatment. Labor shortage prevented Nickel Offsets Ltd., from doing underground work during the year.

In 1945 the industry, as a whole, provided employment for 12,756 persons and distributed \$26,492,396 in salaries and wages. Fuel and electricity cost \$11,329,125 and explosives, chemicals, drill steel and other process supplies cost \$15,621,975. Female wage-earners in 1945 numbered 525 compared with 792 in 1944. There was a rapid dwindling in the number of female employees after the cessation of hostilities. The industry reported that \$42,226 were spent on prospecting for new mineral deposits in 1945.

Copper recovered from the nickel-copper ores of Ontario totalled 119,725 tons in 1945 compared with 140,395 tons in 1944. Production in 1945 of nickel in all forms from these same ores amounted to 122,537 tons against the previous year's production of 137,295 tons.

In 1945 a considerable tonnage of blister copper produced in Manitoba was treated at the Copper Cliff refinery of the International Nickel Co. of Canada Ltd.; some scrap copper was also refined at Copper Cliff.

The annual financial report of the International Nickel Company of Canada Limited carries the following information with regard to operations in 1945:

"The cessation of hostilities in the summer of 1945, followed by the cancellation of war contracts, caused a sharp decline in deliveries of our metals and an accumulation of nickel stocks. As all of our plants were equipped for sufficient output to fulfil the maximum wartime demands of the United Nations, it became necessary to inaugurate a program of curtailment of operations. This was commenced in August and by the year-end the production of nickel was down to about 50 per cent of the expanded capacity.

"The war years imposed an extraordinarily heavy drain on the ore reserves of the Company and the annual tonnage of ore mined greatly exceeded that of any pre-war year. The ore mined in 1943, 1944 and 1945 was 12,105,545 short tons, 12,117,567 short tons and 10,136,350 short tons respectively. This compares with an average yearly output of 5,321,634 short tons for the three pre-war years, 1936, 1937 and 1938.

"It has, nevertheless, been possible through our extensive diamond drilling and exploration program to make progress in replenishment of proven ore reserves. In spite of the tremendous tonnage of ore removed from the mines during the war years, the proven ore reserves at the end of 1945 stood at 217,373,000 short tons containing 6,866,000 tons of nickel-copper, compared with 212,368,000 short tons at the end of 1938 containing 6,806,000 tons of nickel-copper.

"Process improvement designed to increase efficiency of operations has been demonstrated satisfactorily in a pilot plant. Work has already commenced on an addition to the Copper Cliff smelter to provide for this betterment."

The following is quoted from the annual financial report of the Falconbridge Nickel Mines Limited:

"Both the tonnage of ore treated and of metals produced declined substantially from the all time peak established in 1944. During the first quarter of 1945 operations were at a level only slightly reduced from the last quarter of 1944, but during the second quarter the shortage of labor became so acute, particularly underground, that it was necessary to close the smaller of the two furnaces at the end of June, due to the shortage of hoisted ore.

"Following the cessation of hostilities in Europe, receipt of favourable news concerning the Company's Norwegian refinery led to diversion of part of our matte production to our refinery at Kristiansand. The first shipment left Falconbridge about the end of July and beginning in late November the total matte production was earmarked for Kristiansand.

"Applying the established dilution factor, the Falconbridge Mines reserves as of 31st December, 1945, stand at 7,935,500 tons at 1.62% nickel and 0.85% copper. Reserves of Outside Holdings (interpretation of diamond drilling results) show 5,746,500 tons at 1.87% nickel and 1.04% copper."

Table 137.—Principal Statistics of the Nickel-Copper Mining, Smelting and Refining Industry in Canada, 1943-1945 (*)

	1943	1944	1945
Number of firms.....	(a) 6	(a) 5	(a) 4
Number of mines.....	10	9	8
Number of smelters.....	3	3	3
Number of copper refineries.....	1	1	1
Number of nickel refineries.....	1	1	1
Capital employed.....	\$ 167,097,138	(c) 1,282	(c) 1,254
Number of employees—On salary.....	1,230	14,175	11,502
On wages.....	13,420		
Total.....	14,650	15,457	12,756
Salaries and wages—Salaries.....	\$ 3,414,557	3,661,427	3,603,371
Wages.....	\$ 26,781,415	25,556,018	22,889,025
Total.....	\$ 30,195,972	29,217,445	26,492,396
Fuel and purchased electricity used.....	\$ 12,649,118	12,795,637	11,329,125
Process supplies used.....	\$ 17,872,418	18,449,774	15,621,975
Estimated gross value of matte exported and Canadian refinery products (b).....	\$ 128,583,784	121,493,774	112,780,854
Value of production (net).....	\$ 97,931,927	90,130,255	85,791,717

(*) Does not include data for mines, power plants, etc., operated by subsidiary company.

(a) All in Ontario.

(b) Includes value of customs material.

(c) Not recorded in 1944 and 1945.

Table 138.—Output From Ontario Nickel-Copper Mines and Smelters, 1943-1945 (Short tons)

	1943	1944	1945
Ore shipped from mines.....	12,920,917	12,955,208	10,854,735
Ore treated (*).....	12,912,332	12,966,679	10,865,722
Converter copper produced in Ontario from Ontario ores (a).....	130,905	133,879	114,899
Nickel Produced in Ontario (b).....	106,069	104,677	94,832
Matte exported (c).....	56,833	48,287	41,319
Nickel content of matte exported.....	37,911	32,618	27,706
Copper content of matte exported (a).....	7,532	6,516	5,479

(*) Represents the tonnage of crude ore smelted together with the tonnage of ore milled.

(a) Copper content, including copper content of Ontario ores purchased, less reverts.

(b) Includes nickel content of salts and oxides produced from nickel-copper ores only.

(c) Less a relatively small tonnage of matte returned to Canada for retreatment.

Table 139.—Employees, Salaries and Wages, in the Nickel-Copper Mining, Smelting and Refining Industry in Canada, 1945

—	On Salary		Mine and smelter			Mill		Total	Salarie and wages
			Surface		Under-ground				
	Male	Female	Male	Female	Male	Male	Female		\$
Salaries employees—									
Mine and mill.....	396	42						438	1,329,091
Smelters and Refineries.....	642	174						816	2,274,280
Total.....	1,038	216						1,254	3,603,371
Wage-earners—									
Mine and mill.....			2,120	22	3,141	228	48	5,559	11,679,065
Smelters and refineries.....			5,488	455				5,943	11,209,960
Total.....			7,608	477	3,141	228	48	11,502	22,889,025
Grand Total.....	1,038	216	7,608	477	3,141	228	48	12,756	26,492,396

Table 140.—Wage-Earners, by Sex and Months, Entire Industry, 1943-1945

Month	1943		1944		1945	
	Male	Female	Male	Female	Male	Female
January.....	13,381	511	14,006	770	13,152	715
February.....	13,379	527	14,048	779	13,032	712
March.....	13,210	599	13,843	754	12,508	702
April.....	12,844	628	13,447	740	11,975	689
May.....	12,690	648	13,171	782	11,865	665
June.....	12,844	668	13,186	791	11,850	636
July.....	12,648	673	13,095	814	11,623	598
August.....	12,510	688	13,012	828	10,395	543
September.....	12,167	708	12,731	835	9,231	364
October.....	12,159	695	12,771	822	9,308	367
November.....	12,521	670	13,319	799	8,270	298
December.....	12,978	676	13,543	788	8,502	1
Average.....	12,778	641	13,383	792	10,977	525

Table 141.—Wage-Earners, by Months, in Nickel-Copper Mines Only, 1945 (*)

Month	Mine			Mill	
	Surface		Underground	Male	Female
	Male	Female			
January.....	2,408	38	4,239	266	73
February.....	2,419	33	4,190	266	77
March.....	2,401	34	3,897	262	75
April.....	2,399	29	3,606	266	76
May.....	2,411	27	3,462	260	71
June.....	2,488	29	3,323	255	68
July.....	2,434	26	3,239	258	58
August.....	2,049	35	2,859	219	46
September.....	1,796	9	2,350	187	9
October.....	1,729	4	2,311	187	9
November.....	1,457	4	2,098	154	9
December.....	1,453		2,114	147	
Average.....	2,120	22	3,141	228	48

(*) Included in Table 140.

Table 142.—Wage-Earners, by Months, in Nickel-Copper Smelters and Refineries Only, 1945 (*)

Month	Male	Female	Month	Male	Female
January.....	6,239	604	August.....	5,208	462
February.....	6,157	602	September.....	4,896	346
March.....	5,948	593	October.....	5,081	354
April.....	5,704	584	November.....	4,561	285
May.....	5,732	567	December.....	4,788	1
June.....	5,734	539			
July.....	5,692	514	Average.....	5,488	455

(*) Included in Table 140.

Table 143.—Miscellaneous Expenditures by the Nickel-Copper Mining, Smelting and Refining Industry, 1943-1945

	1943	1944	1945
	\$	\$	\$
Workmen's compensation.....	296,284	377,501	337,219
Silicosis assessment.....	40,660	69,878	71,740
Unemployment insurance.....	175,389	182,478	157,917
Aggregate cost of all supplies purchased.....	28,445,891	28,378,357	24,639,521
Aggregate cost of plant and equipment purchased.....	5,018,845	4,017,231	2,497,049

(*) Includes data relating only to companies who conduct both mining and smelting operations.

Table 144.—Dividends Paid by Specified Nickel-Copper Mining Companies, 1945

	Dividends 1945	Total Dividends Paid to End 1945
	\$	\$
International Nickel Co. of Canada Ltd. only (†).....	26,521,917	386,582,801
Falconbridge Nickel Mines Ltd.....	501,386	9,638,20

(†) Letters patent granted July 25, 1916.

NICKEL

Production figures include nickel in matte exported from the Canadian smelters valued at 18 cents per pound; refined and electrolytic nickel produced in Canada, valued at the average price received for sales of nickel metal from the refinery during the year, and the nickel equivalent in oxides or salts produced, valued in the aggregate at the price obtained from the sales of oxides or salts.

Table 145.—Production of Nickel (*) From Canadian Ores, 1926-1945

Year	Pounds	Value	Year	Pounds	Value
		\$*			\$
1926.....	65,714,294	14,374,163	1936.....	169,739,393	43,876,525
1927.....	66,798,717	15,262,171	1937.....	224,905,046	59,507,176
1928.....	96,755,578	22,318,907	1938.....	210,572,738	53,914,494
1929.....	110,275,912	27,115,461	1939.....	226,105,865	50,920,305
1930.....	103,768,957	24,455,133	1940.....	245,537,871	59,822,591
1931.....	65,666,320	15,267,453	1941.....	232,253,235	68,656,785
1932.....	30,327,968	7,179,862	1942.....	285,211,803	69,998,427
1933.....	83,264,658	20,130,480	1943.....	288,018,615	71,675,322
1934.....	128,687,340	32,139,425	1944.....	274,598,629	69,204,152
1935.....	138,516,240	35,345,103	1945.....	245,130,983	61,982,133

(*) Usually includes a relatively small quantity of nickel recovered annually from silver-cobalt ores; Canadian nickel production comes entirely from Ontario ores with the exception of 1937 when a relatively small tonnage of nickel ore was exported from a property in British Columbia.

Table 146.—Production of New Nickel in Canada, by Months (in all forms), 1944-1946

Month	1944	1945	1946(*)
	Pounds	Pounds	Pounds
January.....	23,546,809	23,667,393	13,823,097
February.....	22,383,335	20,635,189	12,450,169
March.....	25,290,263	23,412,858	15,677,068
April.....	23,161,864	21,567,624	18,479,626
May.....	24,024,759	23,382,373	14,733,775
June.....	20,374,755	22,546,414	15,188,844
July.....	23,411,947	23,790,534	16,240,647
August.....	23,848,093	21,896,415	15,437,106
September.....	22,710,286	16,434,819	15,960,785
October.....	21,819,119	17,170,277	17,218,750
November.....	22,259,195	15,416,996	17,467,701
December.....	21,768,204	15,210,091	16,988,037
Total—Calendar Year.....	274,598,629	245,130,983	139,665,695

(*) Subject to revision.

Table 147.—Imports Into Canada and Exports of Nickel, 1944 and 1945

	1944		1945	
	Quantity	Value	Quantity	Value
	lb.	\$	lb.	\$
IMPORTS—				
Nickel and nickel silver in ingots.....	16,029	4,355	25,277	7,342
Nickel rods for wire (90% nickel).....	12,882	8,853	12,558	8,978
Nickel in bars and rods, strips and sheets.....	753,147	391,353	1,357,478	697,664
Nickel silver bars, rods and strips.....	3,709	1,739	49,813	14,397
Nickel chromium in bars.....	63,213	54,973	79,403	72,865
Nickel, manufactures of, not plated.....		33,411		27,101
Nickel-plated household hollow-ware.....				661
Nickel household hollow-ware.....				
Nickel-plated ware, n.o.p.....		424,247		652,275
Total Nickel and Its Products.....		918,931		1,481,283
Exports—Total Metal in All Forms.....	265,197,100	68,460,634	216,443,300	54,778,226

Table 148.—Production in Canada, Consumption and Exports of Nickel, 1935-1945

Year	Production in Canada (All forms, including content in oxide and in matte exported)	Consumption of refined nickel in Canada	Exports		
			Nickel contained in matte or speiss	Nickel in oxide	Refined nickel
			(Tons of 2,000 pounds)		
1935.....	69,258	500	29,233	1,317	40,814
1936.....	84,870	500	30,812	2,661	53,346
1937.....	112,453	900	40,404	2,554	68,427
1938.....	105,286	657	44,324	1,842	52,686
1939.....	113,053	635	47,051	2,425	67,914
1940.....	122,779	1,509	38,484	3,864	82,168
1941.....	141,129	3,464	42,616	7,240	87,739
1942.....	142,606	4,509	41,263	9,224	88,308
1943.....	144,009	3,440	36,415	3,892	95,240
1944.....	137,292	2,350	33,848	1,242	97,509
1945.....	122,565	2,410	28,295	1,755	78,168

Table 149.—Nickel Production by Principal Countries, 1940-1944 (American Bureau of Metal Statistics)

	1940	1941	1942	1943	1944
	(Tons of 2,000 pounds)				
Canada (a).....	122,779	141,129	142,606	144,009	137,299
New Caledonia (b).....	9,900	9,000	6,982	7,110	7,411
Burma (c).....	1,000	1,000			
Greece (d).....	1,500				
Norway.....	1,100	1,000	1,004	636	583
United States (e).....	550	620	600	640	990
Cuba (f).....				2,700	5,100
Germany.....	891	843	705	1,049	

(a) Production in all forms from Canadian ores, as reported by the Dominion Bureau of Statistics.

(b) Estimated content of ore and matte exported.

(c) Nickel content of speiss obtained as a by-product.

(d) Nickel and cobalt content

(e) By-product in electrolytic refining of copper.

(f) Nickel content of oxide.

Table 150.—Production of Copper From Ontario Ores Only, 1926-1945

Year	Pounds	Value	Year	Pounds	Value
		\$			\$
1926.....	41,312,867	4,828,964	1936.....	287,914,078	26,898,920
1927.....	45,341,295	4,946,533	1937.....	322,039,208	41,716,364
1928.....	66,607,510	8,770,149	1938.....	309,030,106	30,405,500
1929.....	88,879,853	14,622,572	1939.....	328,429,665	32,637,305
1930.....	127,718,871	15,187,259	1940.....	347,931,013	34,742,229
1931.....	112,882,625	9,096,463	1941.....	333,829,767	33,192,644
1932.....	77,055,413	4,407,928	1942.....	308,282,414	30,625,404
1933.....	145,504,720	10,118,847	1943.....	277,840,560	32,232,027
1934.....	205,059,539	14,822,704	1944.....	285,307,278	33,845,632
1935.....	252,027,928	19,295,965	1945.....	239,450,875	29,771,633

Table 151.—Total Production of New Copper in Canada, by Provinces and Method of Computation, 1944 and 1945

	1944		1945	
	Pounds	Value	Pounds	Value
		\$		\$
By PROVINCES—				
Quebec.....	108,055,172	12,966,620	102,685,069	12,886,976
Ontario.....	285,307,278	33,845,632	239,450,875	29,771,633
Manitoba.....	43,878,639	5,265,437	41,126,155	5,161,332
Saskatchewan.....	73,514,499	8,821,740	65,900,701	8,270,538
British Columbia.....	36,302,628	4,356,315	25,751,252	3,231,782
Northwest Territories.....	11,902	1,428		
Total.....	547,070,118	65,257,172	474,914,052	59,322,261
By SOURCES (†)—				
In blister and anode copper produced.....	493,946,346	59,273,337	437,459,705	54,901,192
In ores, concentrates and copper matte exported (*).....	40,090,591	4,810,849	26,495,439	3,325,177
In nickel-copper matte exported.....	13,033,181	1,172,986	10,958,908	1,095,892
Total.....	547,070,118	65,257,172	474,914,052	59,322,261

(†) Where computed.
(*) Contains a relatively small quantity of copper contained in gold and silver ores shipped to Canadian smelters.

Table 152.—Production of Copper in Canada, According to Origin of Ores and by Provinces, 1944 and 1945

Province	From copper-gold-silver ores	From nickel-copper ores	From gold and other ores	Total
1944	(Pounds)			
Quebec.....	107,150,904		904,268	108,055,172
Ontario.....	4,508,996	230,790,592	7,690	285,307,278
Manitoba.....	43,878,639			43,878,639
Saskatchewan.....	73,514,499			73,514,499
British Columbia.....	35,997,974		304,654	36,302,628
Northwest Territories.....			11,902	11,902
Canada.....	265,051,012	230,790,592	1,228,514	547,070,118
1945				
Quebec.....	101,940,832		744,187	102,685,069
Ontario.....		239,450,083	792	239,450,875
Manitoba.....	41,126,155			41,126,155
Saskatchewan.....	65,900,701			65,900,701
British Columbia.....	25,613,355		137,897	25,751,252
Northwest Territories.....				
Canada.....	234,581,093	239,450,083	882,876	474,914,052

Table 153.—Production (*) of Refined Copper in Canada For Years Specified

Year	Tons	Year	Tons
1915.....		1938.....	227,240
1916 (†).....	483	1939.....	231,684
1917.....	3,901	1940.....	261,878
1918.....	3,809	1941.....	278,224
1919.....	3,467	1942.....	268,447
1935.....	173,290	1943.....	51,495
1936.....	191,595	1944.....	256,244
1937.....	215,080	1945.....	228,861

(*) From all sources.

(†) First electrolytic copper produced commercially in Canada.

Table 154.—Imports and Exports of Copper, 1944 and 1945

	1944		1945	
	Pounds	\$	Pounds	\$
IMPORTS				
Copper in blocks, pigs and ingots.....	4,500	762	100	23
Copper, scrap.....	26,700	2,604	98,900	8,957
Copper in bars or rods for the manufacture of trolley, telegraph and telephone wires, electric wires and electric cables.....	578,400	87,325	2,526,700	383,611
Copper bars or rods, n.o.p.....	193,300	41,581	202,400	43,625
Copper in strips, sheets or plates.....	165,400	49,657	163,100	43,883
Copper tubing, not manufactured.....	375,731	133,802	605,163	201,857
Copper rollers.....		1,289		45,320
Copper wire, n.o.p.....	90,248	49,850	275,902	110,181
Copper wire cloth, woven.....		475		1,274
Copper manufactures, n.o.p.....		274,771		346,990
Copper sub-acetate.....	440	140	400	124
Copper sulphate (blue vitriol).....	8,259,600	491,473	6,518,854	417,808
Total.....		1,133,723		1,603,653
EXPORTS				
Copper, fine, contained in ore, matte, regulus, etc.....	55,978,500	3,918,493	38,589,200	2,701,244
Copper blister.....		110,899		231,505
Copper, old and scrap.....	1,927,400		2,875,700	
Copper in ingots, bars, cakes, slabs and billets.....	270,466,200	29,049,257	258,698,600	32,093,294
Copper in rods, strips, sheets, plates and tubing.....	36,126,900	4,193,044	14,561,700	1,956,339
Copper wire and cable, insulated.....		2,200,550		3,067,192
Copper wire, bare.....		1,018,946		740,225
Copper wire, screen.....		8,332		10,912
Copper manufactures, n.o.p.....		38,426		53,948
Total.....		40,543,423		40,859,624

Table 155.—Production of Refined Copper in Canada, Consumption, Imports and Exports, 1935-1945

Year	Production in Canada	Domestic consumption	Exports	Imports	Stocks at end of period
(Tons of 2,000 pounds)					
1935.....	173,290	43,000	121,768	19	Not
1936.....	191,595	52,000	155,430	95	available
1937.....	215,080	58,000	148,071	8	
1938.....	227,240	54,000	181,764	6	
1939.....	231,684	57,000	165,819	3	(Oct. 31) 15,418
1940.....	261,878	107,000	154,502	6	17,572
1941.....	278,224	142,000	126,424		18,312
1942.....	268,447	183,000	98,617		21,446
1943.....	251,495	176,000	64,335		27,710
1944.....	256,244	122,000	135,233	2	26,600
1945.....	228,861	90,000	129,345		16,760

Table 156.—World Production of Copper 1940, 1944 and 1945, by Countries According to Origin of the Ore (American Bureau of Metal Statistics)

Country	1940	1944	1945
(Tons of 2,000 pounds)			
United States.....	892,266	1,006,653	805,174
Mexico.....	45,003	47,589	67,784
Canada.....	327,797	273,535	238,142
Cuba.....	11,574	6,256	9,053
Newfoundland.....	8,500	5,500	5,200
Bolivia.....	7,341	6,800	6,721
Chile.....	400,180	549,305	518,304
Peru.....	48,463	35,703	33,375
Ecuador.....	1,560	4,065	4,216
Total America.....	1,742,684	1,935,406	1,687,969
Finland.....	16,806	17,462	16,510
Italy.....	5,000		
Germany.....	26,162	23,148	
Norway.....	17,118	15,900	5,000
Spain and Portugal.....	15,000	12,900	10,200
Sweden.....	19,461	17,863	20,700
Yugoslavia.....	47,346		
India, including Burma.....	11,500		
Turkey.....	9,661	12,076	10,800
Philippines.....	10,080		
Belgian Congo.....	164,054	182,413	176,600
Rhodesia.....	291,534	246,498	215,572
Other Africa.....	18,800	24,800	25,800
Total Africa.....	474,388	453,711	417,972

METALS OF THE PLATINUM GROUP

(From the Annual Review of the Bureau of Mines, Ottawa)

World annual production of platinum and its allied metals is estimated at 500,000 ounces with a peak of 773,000 ounces in 1942. Canada has been the leading producer of platinum since 1934 when it displaced Russia; the other principal producers in order of importance being Russia, South Africa, and Colombia. Canada also leads as a producer of palladium as a result of the great increase in recent years in the Canadian output of nickel. Owing to the disorganized state of the world markets and to restrictions on the publication of statistics, no worthwhile estimate can be made of world production and consumption of the platinum group of metals for 1945. The world consumption, however, was probably about equal to production.

The market situation in 1945 is explained by Charles Engelhard, President of Baker and Company, Incorporated, in the following, which is abstracted from his annual review:

"Shortly after the war ended, the United States and other governments (including Canada), removed all remaining restrictions on the use of platinum metals for jewelry and other peacetime uses. This was followed by a heavy demand for platinum by manufacturers of civilian goods (particularly jewelry manufacturers). Supplies of platinum in the hands of the trade were not adequate to meet this pent-up demand.

"The merit and value of the platinum metals for industrial purposes is demonstrated by the following figures, compiled by the United States Bureau of Mines, showing the uses in the United States of the platinum metals during the first six months of 1945:—

Electrical and chemical industries.....	212,500 ounces
Dental and medical purposes.....	37,000 "
Jewelry.....	37,000 "

286,500

"Palladium made great gains during the war as a precious metal for fine jewelry.

"Platinum metals contributed greatly to the winning of the war through their widespread use in military equipment and in the production of war goods.

"The uses of platinum metals in civilian goods are expected to be more diversified than in the pre-war period.

"The important improvements contributed by these metals are better quality in chemical products at lower costs; appliances and equipment that give better service with less maintenance; and greater precision and reliability in measuring instruments and automatic controllers or recorders. Current research and development are aimed at the continued improvement of platinum alloys and the expansion of the platinum metals in world markets."

Except for iridium, the prices per fine ounce for the platinum group of metals remained stable. Platinum was \$35, palladium \$24, osmium \$50, rhodium \$125, and ruthenium \$35 an ounce. Iridium sold at \$120 from January to August, and at \$90 to \$100 from September to December.

Table 157.—Production of Metals of the Platinum Group From Ontario Copper-Nickel Ores, 1939-1945 (a)

Year	Platinum (*)		Palladium (†)	
	Fine ounces	\$	Fine ounces	\$
1939.....	148,877	5,221,712	135,402	4,199,622
1940.....	108,464	4,239,424	91,522	3,520,746
1941.....	124,257	4,747,860	97,432	3,396,304
1942.....	285,188	10,897,033	222,573	8,279,221
1943.....	219,706	8,458,681	126,004	5,233,068
1944.....	157,523	6,064,635	42,929	1,960,085
1945.....	208,234	8,017,010	458,674	18,671,074

(*) In addition, a relatively small quantity of alluvial platinum is usually recovered in British Columbia; such recovery in 1943 totalled 7 ounces valued at \$270; nil since.

(†) Includes other platinum metals except platinum and represents the entire Canadian production.

(a) Prior to 1945 the figures reported were the refined metals recovered and the contents of concentrates sold each year. The figures for 1945 represent the metal content of platinum metals concentrates produced, together with adjustment of previous figures to this basis for the years 1938 through 1945.

Table 158.—Production of Selenium and Tellurium From Nickel-Copper Ores, 1939-1945

Year	Selenium		Tellurium	
	Pounds	Value	Pounds	Value
		\$		\$
1939.....	126,930	224,539		
1940.....	136,350	260,429	3,491	5,607
1941.....	142,498	272,171	11,453	18,394
1942.....	76,000	145,920	9,500	15,200
1943.....	82,000	143,500	8,600	15,050
1944.....	65,000	117,000	9,900	17,325
1945.....	168,000	322,560		

Table 159.—Production of Gold and Silver From Nickel-Copper Ores, 1939-1945

Year	Gold		Silver	
	Fine ounces	Value	Fine ounces	Value (*)
		\$		\$
1939.....	77,094	2,786,177	2,496,632	1,010,886
1940.....	90,863	3,498,225	2,803,052	1,072,167
1941.....	77,960	3,001,460	2,633,815	1,007,698
1942.....	70,861	2,728,148	2,238,177	943,839
1943.....	55,776	2,147,376	1,648,888	746,122
1944.....	55,286	2,128,472	1,828,978	786,461
1945 (a).....	91,369	3,528,102	1,735,143	815,417

(*) Estimated.

(a) Includes 26,589 oz. of gold and 84,614 oz. of silver recovered from platinum metals concentrates in foreign plants in previous years and not previously recorded.

CHAPTER FIVE

MISCELLANEOUS METAL MINING INDUSTRIES IN CANADA

Including General Statistics Relating to the Industries in this Group and Commodity Statistics Showing any Production by Provinces and Prices on:

Aluminum	Manganese
Antimony	Mercury
Beryllium	Molybdenum
Bismuth	Pitchblende
Boron	Selenium
Cadmium	Tantalum-Columbium
Calcium	Thallium
Cerium	Tellurium
Chromium	Tin
Iron and steel	Titanium (ilmenite)
Indium	Tungsten
Lithium	Vanadium
Magnesium	Zirconium

General Review

Data on the mining of certain metal-bearing ores, other than those commonly classified as gold, silver, copper, nickel, cobalt, lead and zinc, have been grouped, for statistical purposes, as a single industry by the Dominion Bureau of Statistics. Their production in some instances is confined to a relatively few operators and the annual extraction of certain types often fluctuates in an erratic manner according to demand and supply. Included in this report, with the finally-revised statistics relating to the Canadian production of these ores or metals, are notes and statistical data pertaining to various rare or semi-rare metals or metalliferous ores produced in other countries. Metals and metal-bearing ores produced in Canada during 1945 and classified as miscellaneous include antimony, bismuth, cadmium, chromite, iron ore, magnesium, manganese ore, mercury, molybdenite, pitchblende, selenium, tellurium, titanium ore, tin and tungsten concentrates. In addition to particulars relating to these metals or minerals, the bulletin contains notes of a summary nature on aluminum, beryllium, lithium, vanadium and a few of the rarer metals.

It is to be noted that the majority of the metals listed above as Canadian products and including bismuth, cadmium, selenium and tellurium, represent by-products recovered in the refining of lead, zinc or copper and, for this reason, such statistics as relate to their production in Canada are included with those of either the silver-lead-zinc mining industry, the copper-gold-silver mining industry, or the non-ferrous smelting and refining industry.

The mining of certain ores, classified as strategic during the war years, and including molybdenite, tungsten minerals, etc., was curtailed or terminated in 1945. The production of these ores, described in some instances as "projects" was conducted principally by or under the supervision of the Wartime Metals Corporation, a Canadian Government organization.

There were 24 active firms in the miscellaneous metals mining industries in 1945; to the 985 employees there was a payment of \$2,041,349 in salaries and wages; fuel, electricity, supplies, freight and ore treatment cost \$2,519,571. The gross value of production was \$4,276,130 in 1945 compared with \$5,360,993 in 1944.

Table 159.—Principal Statistics (*) of the Miscellaneous Metal Mining Industry in Canada, 1944 and 1945

	1944	1945
Number of firms.....	27	24
Number of plants.....	27	23
Number of employees—On salary.....	237	178
On wages.....	1,148	807
Total.....	1,385	985
Salaries and wages—Salaries.....\$	485,401	324,594
Wages.....\$	2,323,612	1,716,755
Total.....\$	2,809,013	2,041,349
Value of production (gross).....\$	5,360,993	4,276,130
Cost of fuel and electricity.....\$	951,929	753,184
Process supplies used.....\$	657,430	356,248
Smelter charges.....\$	58,937	35,875
Freight.....\$	389,554	1,374,264
Value of production (net).....\$	3,286,886	1,756,559

(*) Does not include data relating to smelters and refineries or to mining in the Northwest Territories. Data for 1945 cover only chromium, iron, molybdenum, titanium and tungsten.

Table 160.—Average Number of Wage-Earners, By Months, 1944 and 1945

Month	1944					1945				
	Surface		Under-ground	Mill		Surface		Under-ground	Mill	
	Male	Female		Male	Female	Male	Female		Male	Female
January.....	763	66	454	167	1	527	19	99	85	1
February.....	829	60	428	173	1	554	20	94	95	1
March.....	788	57	416	167	3	543	20	93	95	1
April.....	766	48	362	174	12	582	22	95	98	19
May.....	794	41	256	144	15	592	21	90	106	22
June.....	757	34	231	126	18	622	21	87	118	22
July.....	731	33	210	126	18	648	25	144	135	23
August.....	643	33	179	101	20	629	22	92	118	18
September.....	612	34	164	92	16	518	22	90	115	18
October.....	593	30	163	86	18	528	22	60	124	9
November.....	575	26	168	91	17	520	9	96	139	7
December.....	525	27	173	80	1	515	9	91	125	1
Average.....	696	41	267	127	12	566	19	97	113	12

ALUMINUM

Although Canada has no bauxite, the principal ore of aluminum, the Canadian aluminum smelting industry is the second largest in the world, being exceeded only by that of the United States. The principal factor favouring the establishment of the industry in Canada is abundant and low-cost hydro-electric power at points where necessary raw materials can be cheaply and conveniently assembled.

Production is entirely by the Aluminum Company of Canada, Limited, which has an ore treatment plant at Arvida, Quebec, and in 1945 had reduction works at Arvida, Ile Maligne, Shawinigan Falls, La Tuque and Beauharnois, all in the province of Quebec. These reduction plants had a total rated yearly capacity of 550,000 tons of aluminum or over 20 per cent of the estimated productive capacity of the world.

Fabricating plants are located at Kingston, Toronto and Etobicoke in Ontario, and at Shawinigan Falls in Quebec. These secondary plants consume only a small part of the primary ingot production, from 80 to 90 per cent being exported to all parts of the world.

Developments in 1945 consisted mainly in adjusting production to meet the lesser peacetime demand. The reduction plants at Shawinigan Falls, La Tuque and Beauharnois were closed during the year and operations were concentrated at Arvida and Ile Maligne.

The principal imported raw materials used in the Canadian aluminum industry are bauxite from British Guiana, coal and coke from the United States, fluorspar from Newfoundland, and cryolite, from Greenland and the United States.

No bauxite occurs in Canada, but clay, shale, nepheline syenite, and anorthosite, containing from 20 to 30 per cent alumina, are found in many parts of the country. The utilization of these low-grade materials has been the object of much research and various processes have been developed. The economic success of any of these processes will depend in large part upon local conditions, but it has yet to be proved that any of them can compete on an even basis with the Bayer process, the standard method for producing alumina, and which utilizes bauxite containing less than 7 per cent silica and from 55 to 60 per cent alumina.

Aluminum metal being only one-third as heavy as steel, untarnishable, and also a good conductor of electricity, is finding an increasingly wide field of usefulness. It is available from fabricating plants in many forms as sheets, foil, castings, forgings, rolled and extruded shapes, tubes, rods, wire, powder and paste. Because of its light weight and strength when alloyed, it is widely used in the making of aircraft and for many other purposes where lightness of structural metal is particularly desirable. Large tonnages are used for making cable for transmission of electricity, and for making cooking utensils and containers for food and beverages. It is finding increasing use in architecture and in construction of transportation equipment such as railway cars, automobiles, and boats.

The price of aluminum ingot throughout 1945 was 15 cents per pound f.o.b. plant, but early in 1946 the price was reduced to 13½ cents per pound.

Table 161.—Production in Canada, Domestic Consumption, Imports and Exports of Aluminum Ingots, 1935-45

Year	Production	Domestic Consumption	Exports	Imports
	(Tons of 2,000 pounds)			
1935.....	23,171	8,778	29,974	85
1936.....	29,640	9,423	28,805	27
1937.....	46,906	10,903	48,500	40
1938.....	71,203	9,396	64,724	69
1939.....	82,840	10,544	70,578	189
1940.....	109,144	18,197	86,536	133
1941.....	213,873	19,717	192,757	3
1942.....	340,596	32,700	314,483	.....
1943.....	495,749	40,100	375,383	1
1944.....	462,065	38,400	295,226	66
1945.....	215,712	40,800	382,286	51

Table 162.—Imports of Aluminum and Bauxite into Canada, 1944 and 1945

Item	1944		1945	
	Cwt.	Value	Cwt.	Value
		\$		\$
Alumina.....	2,442	38,530	6,384	99,975
Bauxite ore.....	26,560,509	9,984,818	18,794,253	7,262,766
Cryolite.....	50,373	248,562	99,658	424,486
Aluminum pigs, ingots and blocks.....	1,324	27,085	1,013	19,383
Aluminum scrap.....	4,564	33,034	6,408	47,118
Aluminum angles, channels and beams.....	3,372	180,226	307	14,692
Aluminum bars, rods and wire.....	35,424	853,672	5,264	131,791
Aluminum leaf.....	.....	47,845	.....	69,437
Aluminum pipes and tubes.....	594	70,323	120	9,384
Aluminum plates, sheets and strips.....	27,007	945,287	16,332	476,162
Aluminum powder.....	28	2,435	46	4,435
Aluminum wire and cable.....	.....	.....	27	1,734
Aluminum household hollow ware.....	.....	11,635	.....	98,186
Aluminum manufactures n.o.p.....	.....	420,261	.....	951,138

Cwt.=100 pounds.

Table 163.—Exports of Aluminum from Canada, 1944 and 1945

Item	1944		1945	
	Cwt.	Value	Cwt.	Value
		\$		\$
Aluminum scrap.....	36,040	214,572	130,335	770,825
Aluminum wire and cable.....		59,498		1,049,797
Aluminum manufactures, n.o.p.....		9,441,522		8,810,816
Aluminum in bars, blocks, ingots and blooms.....	5,904,532	93,493,588	7,645,729	121,778,512
Aluminum in rods, sheets and circles.....	62,485	2,310,424	37,821	1,070,281
Aluminum kitchen utensils and hollow ware.....		799		86,763

Table 164.—World Production of Aluminum, 1939, 1942, 1945
(From the annual report of the American Bureau of Metal Statistics)

Country	1939	1942	1945
	(Metric tons)		
United States.....	148,367	472,747	450,493
Canada.....	75,152	308,989	195,694
Total America.....	223,519	781,736	646,097
Austria.....	4,283	9,680	
France.....	52,500	45,200	37,225
Germany (a).....	195,145	254,257	
Great Britain.....	25,000	47,525	32,407
Italy.....	34,200	43,541	
Norway.....	31,130	20,498	4,608
Russia.....	73,000		
Spain.....	1,080	742	592
Sweden.....	1,966	1,294	
Switzerland.....	28,000	22,000	
Total Europe (a).....	376,704	451,537	
Japan.....	30,000		
India.....		500	1,500

(a) Including estimates for uncertain productions in Hungary and Yugoslavia.

ANTIMONY

The following summary has been taken, for the most part, from the Annual Review of the Bureau of Mines at Ottawa.

Antimony in the form of stibnite occurs in various parts of Canada, but with the exception of small experimental shipments in 1939 and 1940 from the Fort St. James deposits in northern British Columbia, no antimony ore has been produced in Canada since 1917. Production of high grade electrolytic antimony was commenced in Canada in 1938 at the plant of the Consolidated Mining and Smelting Company of Canada, Limited, at Trail, British Columbia, but was discontinued indefinitely in the spring of 1944. In place of refined antimony, the Consolidated Mining and Smelting Company is now producing an antimonial lead containing 25 per cent antimony, which for many purposes, is just as suitable as metallic antimony.

The antimony contained in the antimonial lead produced at Trail is obtained from antimonial fume residues which are a by-product of the lead-zinc operations and production is intermittent, depending upon the accumulation of antimonial fume. The recorded output of 1,667,951 pounds in 1945 represents the antimony content of antimonial lead produced in the Trail plant.

During 1945 antimony was in short supply. In the first half of the year Canada was allocated 60 tons of antimony per month from the United States to supplement production of antimonial lead at Trail, which is sold to the producers of battery plates, solders, and babbitt metal, but in the second half of the year this allocation was reduced to 30 tons per month.

Because of the shortage of antimony in the United States and the increased demands in that country and the United Kingdom, coupled with a curtailment of supplies due to a decrease in shipments of antimony ores in Bolivia, the United States served notice that shipments to

Canada would continue to be restricted to 30 tons a month during the first half of 1946. This was supplemented by a production of approximately 55 tons a month of contained antimony from the Trail plant during January, February, March and April. Early in 1946 it was understood that Consolidated Smelters would have to close its antimonial lead plant for a time because the stock of antimonial fume had been exhausted. Later information was to the effect that sufficient fume to commence operations would not be accumulated before November 1946.

Antimony was an important war metal. Early in the war its uses were about equally divided between metal and trioxide, but by the end of 1944 the trend was toward a greatly increased use of oxide for use in flame proofing and fire-retarding paints. In peacetime the oxide of antimony is used extensively as an opacifier in enamels.

The post-war demand for antimony will likely exceed that of the pre-war years because of the increasing requirements for storage batteries and other metal products, and of the new uses developed during the war.

The domestic ceiling price set by the Wartime Prices and Trade Board varied from 18 cents to 21 cents per pound depending on the quantity of antimony metal ordered.

Table 165.—Production of Antimony in Canada, 1937-1945

Year	In Ores Exported		Metal Produced in Canada		Total	
	Pounds	\$	Pounds	\$	Pounds	\$
1937.....	48,163	7,394			48,163	7,394
1938.....	24,560	2,200			24,560	2,200
1939.....	25,405	3,139	1,200,180	148,330	1,225,585	151,469
1940.....	44,700	3,800	2,549,792	392,668	2,594,492	396,468
1941.....	15,292	2,141	3,169,785	443,770	3,185,077	445,911
1942.....	78	13	3,041,030	516,975	3,041,108	516,988
1943.....			1,114,166	189,408	1,114,166	189,408
1944.....			1,937,933	281,000	1,937,933	281,000
1945 (a).....			1,667,951	290,557	1,667,951	290,557

(a) No refined metal in 1945; antimony content of antimonial lead.

Table 166.—Production of Antimony Metal in Canada, Consumption, Imports and Exports, 1937-1945

Year	Production in Canada	Consumption in Canada	Imports	Exports(*)
	(Tons of 2,000 pounds)			
1937.....		430	588	
1938.....		385	428	
1939.....	600	426	119	275
1940.....	1,275	558	118	359
1941.....	1,585	955	1	676
1942.....	1,521	1,187		166
1943.....	557	1,303	120	6
1944.....	968	1,515	779	
1945.....		778	517	

(*) Shipped for export—data not available from Customs' Records.

Table 167.—Consumption of Antimony Metal, by Industries, 1939-1945

Industry	1939	1940	1941	1942	1943	1944	1945
	(Tons of 2,000 pounds)						
Steel foundries.....	20	28	33	1			
White metal foundries.....	344	368	683	909	907	1,191	614
Electrical apparatus plants.....	28	83	115	117	165	183	114
Brass foundries.....	11	4	6	13	14	10	9
Non-ferrous smelters.....	12	46	29	44	134	76	1
Silverware factories.....	7	9	13	7	8	8	9
Ammunition plants.....		14	67	91	71	41	26
Miscellaneous.....	4	6	9	5	4	6	5
Total.....	426	558	955	1,187	1,303	1,515	778

BERYLLIUM

(From the Annual Reviews of the Bureau of Mines, Ottawa)

Beryl, a silicate of aluminum and beryllium, is the commonest beryllium mineral, and is the only present commercial source of the element. It generally contains from 10 to 12 per cent of beryllium oxide, corresponding to from 4 to 4.5 per cent of beryllium. The occurrence of beryl is restricted to pegmatite dykes, in which it is usually found as disseminated crystals, sometimes of very large size. Only rarely, however, is the beryl content of pegmatites sufficient to enable the deposits to be worked for this mineral alone, and a large part of the comparatively small world production has been obtained as a by-product from the mining of feldspar, mica, or lithium minerals.

Canada produces no beryl and very little beryl is used or required by domestic industries. Most of the world supply in recent years has come from Brazil, Argentina, India, the United States, and South Africa.

The most noteworthy occurrences of beryl in Canada are in Ontario, south-eastern Manitoba, and the Northwest Territories.

In Ontario, intermittent work was done prior to 1941 on a beryl pegmatite in Lyndoch township, Renfrew county. A few tons of clean cobbled crystals were obtained, and about 200 tons of milling grade rock was stockpiled. Most of the work on the property was done by the present owners, Canadian Beryllium Mines and Alloys, Limited, 901 Royal Bank Building, Toronto, who, however, have reported no sales. A detailed examination of the main, easterly workings, made in 1943 by the Bureau of Mines, Ottawa, and the Metals Controller's Office, indicated an average content of 0.188 per cent beryl in the total rock excavated, with a maximum for the richest quarry sections of 1.24 per cent. Grade of selected clean beryl crystals was 10.41 per cent BeO.

In Manitoba, a little work was done several years ago on beryl showings in pegmatites opened originally for feldspar and lithium minerals in the Winnipeg River and Oiseau (Bird) River areas, but no shipments were reported.

In the Northwest Territories, exploration in the area north and east of the Yellowknife gold camp has disclosed numerous occurrences of beryl in pegmatites which also contain lithium minerals and tantalite-columbite. Some of these are considered to be of possible economic interest.

In Quebec, scattered occurrences of beryl are known in Lacorne and Preissac townships, Abitibi county, often associated with molybdenite. None of these, however, is believed to be of economic importance.

Beryllium is used chiefly in the form of beryllium-copper alloys, the most important of which contains about 2 per cent beryllium. A beryllium-aluminum alloy containing 5 per cent beryllium is used as a deoxidizer in making aluminum-magnesium products. Straight beryllium metal has only limited applications, notably for the windows of X-ray tubes, where it is used for its transparency to the rays.

Various beryllium salts, principally the oxide and carbonate, are used in industry. A growing demand has developed for the oxide for the preparation of zinc-beryllium silicate, used as a coating for fluorescent lighting tubes and lamps, and for fluorescent screens. The oxide and carbonate, activated by uranium salts or rare earths, act as "phosphors" and are utilized in luminescent paints. The oxide is a super-refractory, with a melting-point of 2,570°C., or 520 degrees above that of alundum, and is used in crucibles, insulators, electrodes, furnace linings, and as a filament coating in lamps. Beryllium acetate is used as a coagulating, hardening bath for sodium alginate, a new English textile made from seaweed.

Ground beryl is used as a batch ingredient in sparkplugs and other ceramic specialties, to which it imparts high electrical and impact resistance and transverse strength. Some is also used in cooking utensil enamels. Consumption for such uses in the United States is estimated at about 100 tons a year.

Most of the present world production of beryl is marketed in the United States, where the following companies engaged in the primary production of beryllium metal, alloys, and compounds are the chief purchasers: Beryllium Corporation of Pennsylvania, Temple (Reading),

Pennsylvania; Brush Beryllium Company, 3714 Chester Avenue, Cleveland, Ohio; and Clifton Products Incorporated, Painesville, Ohio.

The New York price quotations at the beginning of 1945 were: beryllium ore—per unit of BeO, 8 to 12 per cent, f.o.b. mine, \$14.50; foreign ore, nominal. As the year closed the price had declined to \$9 to \$10.

BISMUTH

Refined bismuth is obtained in Canada mainly as a by-product from the treatment of the lead-zinc ores of British Columbia and also as a by-product from the treatment of the silver-cobalt ores of northern Ontario. Most of the world supply is obtained from the treatment of lead and copper refinery slimes and as a by-product from the treatment of gold, tin and tungsten ores.

In British Columbia, the Consolidated Mining and Smelting Company's plant for the electrolytic treatment of bismuth residue resulting from the electrolytic treatment of lead bullion has been operated intermittently since 1928, when it was erected. In Ontario, the Deloro Smelting and Refining Company, Limited, Deloro, formerly obtained a lead bullion that contained bismuth (and some gold and silver) from the treatment of cobalt-silver ores of Cobalt and adjoining areas. This bullion was exported to the United States for refining.

The Molybdenum Corporation of Canada, Limited, which operates a molybdenite mill and concentrator in La Corne township, Abitibi county, Quebec, is modifying its process so the bismuth content of the molybdenite concentrate may be recovered. By roasting and flotation, a bismuth concentrate running in excess of 20 per cent bismuth may be obtained. This concentrate will be shipped to European markets with the molybdenite concentrate.

The demand for bismuth increased considerably during the war owing to its increased use for metallurgical and pharmaceutical purposes. Bismuth in peacetime is used mostly in the manufacture of pharmaceutical products. A much larger portion than formerly is used in the making of so-called fusible or low-melting alloys. There are numerous alloys of bismuth that contain from 33 to 56 per cent bismuth.

The price (London price in Canadian funds) of bismuth in 1945 remained at \$1.38 a pound. The price in New York remained at \$1.25 a pound.

Table 168.—Production of Primary Bismuth in All Forms(*) in Canada, 1931-1945

Year	Pounds	\$	Year	Pounds	\$
1931	118,207	157,650	1938.....	9,516	9,754
1932	16,855	7,340	1939.....	409,449	466,362
1933	78,303	81,526	1940.....	58,529	81,004
1934	253,644	301,215	1941.....	7,511	10,396
1935	13,797	13,245	1942.....	347,556	479,627
1936	364,165	360,524	1943.....	407,597	562,484
1937	5,711	5,654	1944.....	123,875	154,844
			1945.....	189,815	260,047

(*) Refined metal plus bismuth content of bullion exported.

Table 169.—Production of Bismuth Metal in Canada, Consumption, Imports and Exports, 1935-1945

Year	Production	Domestic Consumption	Exports(*)	Imports
	(Tons of 2,000 pounds)			
1935	31	17	33	1
1936	180	16	40	
1937		14	37	
1938		18	40	
1939	205	14	64	5
1940	20	12	77	
1941		16	51	
1942	159	35	199	
1943	204	65	73	
1944	62	46	25	
1945	95	35	41	

(*) Shipped for export by Canadian producers.

Table 170.—Consumption of Bismuth Metal in Canada, by Industries, 1939-1945

Industries	1939	1940	1941	1942	1943	1944	1945
(Tons of 2,000 pounds)							
Medicinals and pharmaceuticals.....	14	12	15	13	28	23	15
White metal foundries.....			1	13	28	20	16
Miscellaneous.....				10	9	3	4
Total.....	14	12	16	36	65	46	35

BORON

According to the United States Bureau of Mines, boron alloys are supplied by United States manufacturers, small quantities being used in the non-ferrous metals industries and in steel making. In cast iron, boron opposes graphitization on solidification and exerts an energetic whitening effect, producing a hard strong iron but reducing malleability. Recently boron has been found to be one of the so-called minor elements that stimulate plant growth and inhibit the development of certain plant diseases.

"The Mineral Industry" reported in 1941 that tests demonstrated that the use of boron deoxidizers and the incorporation of 0.002-0.007 per cent boron in 0.4 per cent carbon steel increases the hardenability, ductility and toughness; the boron is best supplied as a complex alloy of B-Mn-Si-Ti, rather than as ferroboration.

Boron carbide, boron carbide shapes and calcium boride are now produced in Canada.

World reserves of boron minerals are abundant, but known sources are confined to a few countries, chiefly the United States, Chile, Argentina, Peru, Italy and Turkey, although Borax also has been reported in Tibet, Persia, India and Ceylon.

Imports of Borax into Canada during 1945, in packages of 25 pounds or over, totalled 11,425,740 pounds valued at \$329,412. Borax was quoted in the United States in 1945 at \$41.50 per ton, granular technical, March 1945—United States prices:—Ferroboration, per pound of alloy, f.o.b. shipping point, ton lots \$120. Nickel boron per pound of alloy, f.o.b. shipping point: ton lots, \$2.00 (15-18% boron). Manganese-boron, per pound of alloy, f.o.b. shipping point, \$1.89—ton lots (15-20% boron).

CADMIUM

(From the Annual Reviews of the Bureau of Mines, Ottawa)

Cadmium is present in small amounts in most zinc and in some lead ores. Its production is limited entirely to the by-product from electrolytic zinc and from the manufacture of lithopone.

Cadmium metal is produced by the Consolidated Mining and Smelting Company of Canada, Limited at Trail, British Columbia, and by the Hudson Bay Mining and Smelting Company at Flin Flon, Manitoba. The plant at Trail started to produce early in 1928, and like the plant at Flin Flon, which has been in operation since 1936, treats the cadmium residue from the zinc refinery, the procedure being similar. Both plants were in continuous operation during 1945.

Cadmium is used mainly in electroplating and in the manufacture of alloys and compounds, the most common use being as a protective coating for steel. To a much lesser extent it is used in copper alloys. The use of cadmium alloys in motor vehicle bearings and for solders has created a strong demand for the metal. Cadmium is used also in the arts, paints, ceramics, and dyeing, etc.

Cadmium sulphide and cadmium sulposelenide are standard agents for imparting bright resistant yellow and red colours respectively to paints, ceramics, inks, rubber, leather and other products. Paper coated with cadmium sulphide acts as a mustard-gas detector. Cadmium nitrate is used in white fluorescent lamp coatings. The oxide, hydrate and chloride are used in electro-plating solution; the carbonate in ceramics; and the halides in photography.

Cadmium is marketed in metallic form, 99.5 per cent pure and better, and as a sulphide. The principal compounds are cadmium sulphide, cadmium oxide, cadmium lithopone, and cadmium selenide.

The price (Canadian funds) of cadmium metal in 1945 averaged 99 cents a pound, compared with \$1.10 in 1944. The price of metallic cadmium, f.o.b. New York, in commercial sticks, remained at 90 cents a pound.

Table 171.—Production of Cadmium, in Canada, 1928-1945

Year	British Columbia		Manitoba		Saskatchewan	
	Pounds	\$	Pounds	\$	Pounds	\$
1928	491,894	341,374				
1929	773,976	675,294				
1930	456,582	337,871				
1931	323,139	180,958				
1932	65,425	26,824				
1933	246,041	78,733				
1934	293,611	95,665				
1935	580,530	441,203				
1936	526,034	468,170	148,133	131,838	111,749	99,457
1937	436,431	715,747	164,223	269,326	144,553	237,067
1938	510,342	410,090	115,166	92,543	73,630	59,166
1939	799,253	563,241	73,830	52,029	66,608	46,939
1940	778,791	905,734	57,742	67,154	71,594	83,264
1941	1,081,374	1,269,533	61,085	71,714	108,832	127,769
1942	972,413	1,147,447	29,236	34,498	147,314	173,831
1943	598,673	688,474	20,985	24,130	166,955	191,998
1944	386,410	425,051	20,921	23,013	119,639	131,603
1945	510,432	505,328	27,891	27,612	107,741	106,663

Table 172.—Production of Cadmium Metal in Canada, Consumption and Exports, 1935-1945

Year	Production	Domestic	Exports
		Consumption	
	(Tons of 2,000 pounds)		
1935	290	36	235
1936	392	24	362
1937	372	33	283
1938	349	23	233
1939	470	41	525
1940	454	75	399
1941	625	149	455
1942	574	207	400
1943	393	168	286
1944	263	108	192
1945	319	87	175

NOTE.—Statistics on imports are not available.

CALCIUM

The commercial production of calcium in Canada started in 1945 when the metal was recovered from dolomite by Dominion Magnesium Limited in its plant located at Haley, Ontario. During the year the production amounted to 22,720 pounds valued at \$19,312. Shipments were made to plants in Canada and United States.

Calcium metal was imported into the United States from France and Germany prior to the second world war. Metallic calcium is utilized as a scavenger in steel and secondary aluminum, to produce magnesium castings and calcium hydride, and to harden lead. Calcium is used as a deoxidizer and final addition in obtaining particularly clean steels and in imparting better working properties to high nickel-chromium steels. Calcium-silicon (28-35 per cent calcium and 60-65 per cent silicon) and calcium-manganese-silicon are likewise employed for this purpose, although the unalloyed metal may have specific effects. Calcium-bearing alloys are now being made in Canada.

New York quotation for calcium, 97-98 per cent as cast, September, 1945, was \$1.85 per pound, ton lots. Data relating to imports into Canada of calcium are not shown separately in Canadian trade reports.

CERIUM (Monazite)

(From the Annual Reviews of the Bureau of Mines, Ottawa)

Cerium is obtained from monazite, a monoclinic phosphate of cerium metals containing about 32 per cent cerium oxide (Ce_2O_3) and up to 18 per cent thoria (ThO_2). Monazite is distributed widely in igneous rocks throughout the world, especially in gneisses that have been intruded by pegmatites, but usually it forms only a small fraction of one per cent of the containing rock and only the natural concentrations in stream gravels and beach sands have paid for exploration. The chief commercial sources of monazite sand are beach deposits in Brazil and India. There are a few occurrences of monazite in Nova Scotia, Quebec and British Columbia, none of which is of commercial interest. It is usually found as small crystals in granites and pegmatites in the Canadian Shield and small quantities occur in association with the black sands of the Quesnel river, Lillooet district, British Columbia. In the United States there are commercial deposits in Carolina, Florida, and Idaho, and known occurrences in many other States.

Cerium is usually regarded as belonging to the general group of "rare earths", as it invariably occurs in nature associated with the other fourteen members of the group and is very similar to the other rare-earth elements in many of its chemical properties.

In Canada, Shawinigan Chemicals, Limited, Shawinigan Falls, Quebec, has been producing cerium products from cerium chloride since 1940. The output is sold to the Belgo Canadian Manufacturing Company, Limited, of Montreal, for the manufacture of sparking flints.

Prior to the war the leading producers of rare-earth products for the European market were located in Berlin, London, and Paris, and those for the American market, in Chicago. In the United States the present supply of cerium products is provided by Cerium Metals Corporation, Niagara Falls, N.Y.

World production of monazite is approximately 5,000 tons a year.

Thoria, which was used in gas mantles, was formerly the only commercial constituent of monazite, and monazite is still marketed on the basis of its thoria content, although its content of ceria (Ce_2O_3) and of other rare-earth oxides is of chief interest at present. Probably 50 per cent of monazite derivatives are consumed, chiefly as fluorides, in the cores of arc carbons to increase lighting intensity in searchlights, motion-picture projectors, and therapeutic lamps. About 25 per cent of the consumption of monazite derivatives is used in pyrophoric (sparkling) alloys or in ferroceriums for use in sparking flints for lighters. The remainder is used for a variety of purposes, but principally for making optical glassware. Cerium metal is used in the evacuation of radio tubes.

Imports of salts of cerium or of thorium, for the manufacture of gas mantles, was appraised at \$12,428 in 1945 compared with \$16,445 in the preceding year.

CHROMITE

(From the Annual Reviews of the Bureau of Mines, Ottawa)

Owing to the improvement in the chrome supply situation overseas, shipments in Canada were maintained throughout the year by only one producer, namely, Union Carbide Company, which obtains its chromite from the "Montreal" pit in the Black Lake district, Quebec. This mine was operated for the company by Orel Paré. Chromite Limited, near Richmond, Quebec, closed its mine in March after continuous production since the spring of 1942.

Pure chromite (FeO , Cr_2O_3) contains 68 per cent chromic oxide, but in nature it always contains besides iron, varying amounts of magnesia and alumina. It is a heavy, almost black, lustrous and brittle mineral, and the ore usually occurs in dunite bands in serpentine rocks. Chromite is distinguished in the field from other black minerals of similar appearance by its chocolate brown powder or streak when struck or scratched with a hammer.

Most of the Canadian deposits from which production has been obtained are between Quebec City and Sherbrooke in the Eastern Townships of Quebec.

Chromite Limited obtained its output from the old Sterrett mine in Cleveland township, Quebec. The chromite occurs as fairly uniformly disseminated zones, scattered through which

are plums of the massive mineral. The ore zone, which varies in width from 5 to 20 feet, has been traced on the surface for about 2,000 feet. The mine has been developed at 5 levels to a maximum length of 1,800 feet and to a depth of 550 feet. The ore, which averaged 18 per cent Cr_2O_3 , was treated in a 150 ton mill.

The old Montreal pit was operated over 50 years ago and was re-opened by Union Carbide Company in 1941, since when production has been continuous.

The Chromeraïne mine, also in the Black Lake area, was operated in 1943 by Wartime Metals Corporation, but was closed in August, 1944. The ore is chiefly low-grade, banded and disseminated chromite, averaging 8 per cent Cr_2O_3 , with a small amount of the massive mineral. The zone has been traced intermittently for 2,000 feet, has an average width of 33 feet, and in places is 60 feet wide. A small amount of drilling has indicated that the ore extends to a depth of at least 440 feet.

Chromite Association did some prospecting in the Black Lake district in 1945.

In Manitoba, little prospecting was done on the large bodies of low-grade chromite deposits that were discovered early in 1942, north of Oiseau (Bird) River in the southeastern part of the province. Various zones have been traced for lengths of several thousand feet. The ore is high in iron and an economical method of bringing the chrome-iron ratio to within market requirements has not been devised.

The uses of chromite are divided into three groups, namely, metallurgical (by far the most important), refractory and chemical.

In the metallurgical field, chromium is one of the principal alloying elements in a great variety of steels, chief of which in the amount of chromium used are the stainless and the corrosion-resistant steels. It is the vital ingredient with nickel and molybdenum in the making of armour plate, armour-piercing projectiles, and high-speed tool steels, and is used as a hard, toughening element in tank axles and frames, in aeroplane parts, and in other essential war materials.

Chrome ore is used for making refractory bricks or materials used in basic open hearth furnaces, in arches of furnaces, in parts of combustion chambers, chambers of high pressure steam boilers, etc. It is used with magnesia to make chrome-magnesia refractories, an important use in Canada being in the manufacture of brucite magnesia bricks that contain up to 30 per cent Cr_2O_3 .

In the chemical industry, chromite is mainly fundamental salts such as sodium and potassium bichromates that are used in electroplating, tanning, dyeing, glass making, pigments, photography, bleaching, safety matches, antiseptics, some aniline dyes used in printing, etc. Finely powdered chrome oxide is used as a buffing compound for polishing stainless steels. During the war a large amount of chrome chemicals was used for military purposes.

The principal Canadian buyers of chromite for metallurgical use are: Chromium Mining and Smelting Corporation, Sault Ste. Marie, Ontario, and Electro-Metallurgical Company of Canada, Welland, Ontario. The only important purchaser of refractory ore is Canadian Refractories, Limited, Canada Cement Building, Montreal.

United States price of domestic and imported ores of 48 per cent Cr_2O_3 , and 3 to 1 ratio is \$43.50; ores of lower grade and ratio vary down to a minimum of \$28 a long, dry ton at seaboard. Canadian prices of 47 to 48 per cent Cr_2O_3 concentrates are \$25 to \$40 a long ton, f.o.b. mines, depending upon the chrome-iron ratio and upon the percentages of certain impurities.

Table 173.—Production of Chromite in Canada, 1928-1945

Year	Short tons	\$	Year	Short tons	\$
1928.....			1937.....	(*)	43,250
1929.....	126	900	1938.....		
1930.....			1939.....		
1931.....			1940.....	335	5,780
1932.....	78	1,113	1941.....	2,372	42,679
1933.....	30	343	1942.....	11,456	343,568
1934.....	111	1,578	1943.....	29,595	919,878
1935.....	1,144	14,947	1944.....	27,054	748,494
1936.....	(*)	13,578	1945.....	5,755	160,752

(*) Quantity not published.

Table 174.—Principal Statistics for the Chromite Mining Industry(*) in Canada, 1943-1945

		1943	1944	1945
Active firms.....	No.	15	7	4
Employees—Salaries.....	No.	48	42	7
Wage-earners.....	No.	322	202	23
Total.....	No.	370	244	30
Salaries and wages—				
Salaries.....	\$	108,674	80,065	12,590
Wages.....	\$	460,610	293,529	22,699
Total.....	\$	569,284	373,594	35,289
Gross value of production.....	\$	919,878	748,494	160,752
Fuel and electricity used.....	\$	75,806	60,009	8,224
Process supplies used.....	\$	75,995	83,828	15,023
Freight.....	\$	37,969	45,373	.....
Net value.....	\$	730,108	559,284	137,505

(*) All in the province of Quebec.

Table 175.—Imports of Chrome Ores into Canada, 1938-1945

Year	Tons	\$	Year	Tons	\$
1938(*).....	9,103	142,399	1942.....	87,628	1,271,482
1939.....	16,584	232,851	1943.....	103,471	2,121,228
1940.....	29,938	554,413	1944.....	39,089	618,231
1941.....	92,952	1,460,209	1945.....	60,691	1,154,985

(*) Nine months only—not shown separately prior to April 1938.

Table 176.—Imports of Chrome Ores into Canada by Principal Countries, 1944 and 1945

Imported from	1944		1945	
	Tons	\$	Tons	\$
British South Africa.....	395	13,500	2,420	76,197
Southern Rhodesia.....	23,404	342,621	31,590	458,176
British India.....	14,035	214,032	14,660	223,918
Cuba.....	.....	.....	71	1,956
Turkey.....	.....	.....	828	35,711
United States.....	1,255	48,078	11,122	359,027
Total.....	39,089	618,231	60,691	1,154,985

INDIUM

Indium was commercially recovered in Canada only in 1942 when 470 troy ounces valued at \$4,710 were produced at Trail, British Columbia, by the Consolidated Mining and Smelting Company of Canada, Limited. The metal was obtained in the treatment of zinc refinery residues. The United States produces a considerable quantity of indium but data relating to entire world production are not available. Indium is used for plating and as an alloy with other metals. The Bureau of Mines, Ottawa, reports that the augmented production of engine bearings and war restrictions on ordinary plating metals have stimulated interest in indium during the past three years.

Quoting from E. & M.J. Metal and Mineral Markets—June 23, 1945—"The price situation in indium remains unsettled. During the last week producers lowered the quotation to \$3 an ounce troy, a reduction of \$1. Supplies are ample, reflecting increased recovery of this by-product of zinc operations that has occurred in recent years. Use of indium has expanded but not at a

rate to keep pace with production. At the beginning of the year indium was quoted at \$7.50 an ounce troy and a year prior to that at \$10".

At the close of 1945 the quoted price of indium was \$2.25 per ounce troy.

IRON ORE

(From the Annual Reviews of the Bureau of Mines, Ottawa)

Production of iron ore in Canada increased markedly in 1945 and is expected soon to equal the requirements of the Canadian iron and steel plants. However, most of this ore, which is quite high grade, is being exported to the United States in exchange for ores that can be used to greater advantage in the Canadian furnaces. The Dominion Steel and Coal Company, Sydney, Nova Scotia, continues to draw the bulk of its supply from its own mines at Wabana, Newfoundland. Preliminary development work on large deposits in the interior of Labrador and adjoining territory in Quebec which were discovered in 1936, indicates a large tonnage of high-grade ore.

Though deposits of iron are widespread throughout eastern Canada and British Columbia, few have been found of sufficient purity and size to meet the requirements of the modern industry; so few, in fact, that from 1923 until 1939 no iron ore was produced in this country. In 1939 the Helen mine in the Michipicoten area, north of Lake Superior, began to ship sinter. In 1944 the first small shipments of hematite were made from the Steep Rock mine, 150 miles west of Port Arthur. In 1945 the Josephine mine in the Michipicoten area, commenced production of lump hematite. All these mines have substantial reserves of ore, and give promise of steady production for many years to come.

The Algoma Ore Properties Limited, a subsidiary of Algoma Steel Corporation, Limited, shipped 565,078 short tons of sinter from its Helen plant in 1945. The siderite calcined and roasted to make this sinter was derived mainly from the Victoria open-cut, a short distance east of the open-cut that has furnished the ore since 1939. Preparations are being made for underground mining beneath the original open-cut. This mining can be continued for many years in the massive ore body, estimated to contain 100,000,000 tons of ore.

Concentration tests have been continued on the Goulais siliceous magnetite deposit, 50 miles northeast of Sault Ste. Marie, where 100,000,000 tons has been indicated by drilling.

The Josephine mine of Michipicoten Iron Mines, Limited, came into production late in the year and shipment of lump hematite was commenced in December. The mine is equipped for an output of 1,200 tons a day, of which about 150 tons is expected to be lump ore for use in the open-hearth. The remainder, after washing to remove silica, will be mixed with the siderite of the Helen mine to make sinter. Algoma Ore Properties will purchase the concentrate to be sintered and the company is sales agent for the lump ore. The mine is developed on several levels to a depth of 1,000 feet.

In spite of the difficulties inherent in a new operation, Steep Rock Iron Mines Limited, produced 565,345 short tons of hematite in 1945, its first full season. Most of the ore was exported to the United States. Part of it was shipped through a port in Wisconsin and the remainder from the new ore dock of Canadian National Railways at Port Arthur. The ore was all derived from an open-cut on "B" ore body. The approximate average analysis of this deposit and of the three grades shipped in 1945 is as follows:

Shipping Grades

	"B" Orebody	Steep Rock 4" to 10"	Atikokan 2" to 4"	Seine River Minus 2"
	Percent	Percent	Percent	Percent
Iron (dry basis).....	60.80	59.97	60.38	59.09
Phosphorus.....	0.017	0.030	0.027	0.024
Sulphur.....	0.039	0.035	0.029	0.046
Silica.....	3.37	3.41	4.39	4.11
Natural Iron.....	55.68	57.925	57.880	53.317
Loss on Ignition.....	8.04	3.41	4.14	9.77

Pumping of the residue of water from the middle arm of Steep Rock Lake and stripping of overburden from "B" orebody proceeded throughout the year. It is expected that this will permit an increased output from this deposit during 1946. It is intended also to commence operations on "A" orebody, 2 miles to the north, during the coming season.

Development of the hematite deposits in the interior of Labrador, 300 miles north of the port of Seven Islands, and northward across the height-o-land in Quebec, was continued in 1945, Labrador Mining and Exploration Company included the following table in its annual report:

Labrador Iron Ore Deposits (to end of 1945 season)

	Fe + Mn	P.	S.	S.O.	Long tons per vertical foot
Burnt Creek No. 4.....	58.7	.075	.009	7.91	19,000
Knob Lake.....	60.2	.056	.028	3.65	22,000
Ruth Lake No. 1.....	59.9	.055	.010	4.99	65,000
Ruth Lake No. 2.....	60.3	.090	.011	2.43	5,000
Ruth Lake No. 3.....	62.0	.128	.014	2.11	225,000
Ruth Lake No. 5.....	58.8	.148	.008	4.51	60,000
Ruth Lake No. 6.....	59.2	.083	.008	5.97	2,500
Ruth Lake Extension.....	63.6	.035	.030	4.94	84,000
Sawyer Lake.....	68.4	.010	.038	1.43	32,000
Wishart Lake No. 1.....	63.0	.049	.010	5.98	110,000
Wishart Lake No. 2.....	63.3	.063	.015	5.38	35,000
Average and Total.....	62.1			3.99	659,500

Less work has been done on the known deposits northward across the border in Quebec, held by Hollinger North Shore Exploration Company. The grade is similar to the above and the tonnage now indicated is about the same as on the Labrador side. In all cases these measurements have been made on outcrops or with the aid of a little shallow trenching and the full size of the deposits has still to be determined.

The ore so far discovered is partly of Bessemer grade, and most of it will be "lump" ore when mined.

Both the exploration companies named above are controlled by Hollinger Consolidated Gold Mines. The M. A. Hanna Company of Cleveland, Ohio, has a minority interest in Labrador Mining and Exploration Company.

At the end of the year plans were completed for an electric iron smelting plant at Anyox. It is intended to rehabilitate the hydro-electric power plant of 15,000 horsepower capacity, to use charcoal made from local sawmill waste and to smelt magnetite from Texada Island, 500 miles to the south. The project is being financed jointly by B.C. Minerals and Resources Development Company and Privateer Mines Limited.

Table 177.—Principal Statistics for the Iron Ore Mining Industry in Canada, 1943-1945

	1943	1944	1945
Active firms.....	14	8	10
Employees—On salary.....	99	99	145
Wage-earners.....	404	580	657
Total.....	503	679	802
Salaries and wages—			
Salaries..... \$	205,857	242,271	272,716
Wages..... \$	1,229,098	1,220,182	1,481,956
Total..... \$	1,434,955	1,462,453	1,754,672
Gross value of production..... \$	2,032,240	1,909,608	3,635,095
Fuel and electricity used..... \$	363,354	642,761	709,398
Process supplies used..... \$	396,915	200,438	304,666
Freight and treatment charges..... \$	222,013	276,653	1,367,526
Net value..... \$	1,049,958	789,756	1,253,505

Table 178.—Production of Iron Ore(*) in Canada, 1939-1945

Year	Short tons	Value \$
1939.....	123,598	341,594
1940.....	414,603	1,211,305
1941.....	516,037	1,426,057
1942.....	545,306	1,517,077
1943.....	641,294	2,032,240
1944.....	553,252	1,909,608
1945.....	1,135,444	3,635,095

(*) Exclusive of titanium-bearing ores. All iron ore was from mines in Ontario, except 187 tons from Quebec in 1942 and 143,062 tons from New Brunswick in 1943.

Table 179.—Imports into Canada and Exports of Iron Ore, 1936-1945

Year	Imports		Total(*)	Exports
	From United States	From Newfoundland		
(Tons of 2,000 pounds)				
1936.....	755,414	489,036	1,317,033	2,725
1937.....	1,416,015	1,188,771	2,124,972	4,644
1938.....	631,031	607,025	1,302,430	209
1939.....	1,205,261	1,606,775	1,764,844	10,540
1940.....	524,849	716,317	2,418,237	251,626
1941.....	2,212,437	962,259	3,254,655	282,068
1942.....	2,033,961	610,871	2,701,968	295,960
1943.....	2,978,388	911,450	3,906,425	374,677
1944.....	2,501,737	624,890	3,126,649	308,424
1945.....	2,988,484	736,665	3,739,867	771,495

(*) Includes some ore from other countries, principally Brazil.

Table 180.—Iron Ore Charged to Iron Blast Furnaces in Canada, 1936-1945

Year	Canadian	Imported	Total
(Tons of 2,000 pounds)			
1936.....	.....	1,365,082	1,365,082
1937.....	.....	1,796,562	1,796,562
1938.....	.....	1,382,565	1,382,565
1939.....	50,570	1,425,536	1,476,106
1940.....	154,643	2,188,074	2,342,717
1941.....	166,263	2,542,826	2,709,089
1942.....	229,253	3,383,439	3,612,692
1943.....	302,780	2,955,671	3,258,451
1944.....	266,150	3,227,039	3,493,189
1945.....	235,757	2,797,697	3,033,454

IRON AND STEEL AND THEIR PRODUCTS

The Primary Iron and Steel Industry

Table 181.—Provincial Distribution of Active Plants in the Primary Iron and Steel Industry, 1945

Province	Number of firms	Pig iron		Steel ingots and castings		Rolling and drawing mills	Ferro- alloys (a)
		Number of plants	Number of blast furnaces	Number of plants	Number of steel furnaces		
Nova Scotia.....	4	1	4	2	17	3	.....
Quebec.....	15	.....	.....	12	29	3	1
Ontario.....	17	3	10	11	74	10	3
Manitoba.....	3	.....	.....	3	5	1	.....
Alberta.....	2	.....	.....	2	3	1	.....
British Columbia.....	7	.....	.....	7	11	.....	.....
Canada.....	(b) 47	4	14	(c) 37	(d) 139	18	4

(a) Not including artificial abrasive plants which made ferrosilicon as a by-product.

(b) Some firms operate in more than one province.

(c) Includes 2 firms which ceased operations in July and September, 1945.

(d) Includes 6 furnaces which ceased operating in July and September 1945.

Table 182.—Principal Statistics of the Primary Iron and Steel Industry, 1945

	Number of plants	Average number of em- ployees	Salaries and wages	Cost of fuel and electricity at works	Cost of materials at works	Gross sell- ing value of products at works
			\$	\$	\$	\$
Nova Scotia.....	6	5,421	9,985,430	2,496,560	13,123,112	24,418,793
Quebec.....	16	5,745	11,348,835	2,358,053	10,301,898	32,797,360
Ontario.....	27	17,007	34,447,216	10,682,135	61,499,625	129,796,623
Manitoba.....	4	698	1,172,369	329,500	1,005,030	3,021,617
Alberta.....	3	216	340,812	56,165	275,368	936,250
British Columbia.....	7	291	567,827	80,028	212,342	1,308,516
Canada.....	(*) 63	29,378	57,862,489	16,002,441	86,417,375	192,279,159
Per cent change 1945 from 1944.....		-4.5	-4.9	-7.4	-6.3	-9.5

NOTE.—Profits or losses cannot be calculated from above figures as data are not available for general expense items, such as interest, rent, depreciation, taxes, insurance, advertising, etc.

(*) Includes 2 plants which ceased operations in July and September 1945.

Table 183.—Materials Charged to Iron Blast Furnaces, 1944 and 1945

Material	1944		1945	
	Quantity	Cost at furnace	Quantity	Cost at furnace
	Net tons	\$	Net tons	\$
Iron ore—Canadian (crude).....			56,082	245,636
Imported (crude).....	2,468,082	10,351,514	2,228,075	9,707,841
Canadian (beneficiated).....	266,150	1,117,466	179,675	759,447
Imported (beneficiated).....	758,957	3,293,806	569,622	2,454,705
Mill cinder, roll scale, flue dust, etc.....	96,243	276,626	281,189	1,255,914
Scrap (net charge).....	27,604	283,290	37,067	374,158
Limestone—				
From Canadian quarries.....	233,621	330,795	240,247	346,000
From foreign sources.....	520,571	889,501	516,931	699,477
Dolomite.....	57,822	96,857	39,418	56,520
Coke.....	1,687,967	15,518,097	1,631,852	15,447,205
Other materials.....		235,688		269,277
Total.....		32,393,640		31,646,180

Table 184.—Production of Pig Iron and Sales by Producers, 1944 and 1945

Grade	Delivered in molten condition	Machine Cast	Total tonnage made	Sales	
				Quantity	Income from sales
	Net tons	Net tons	Net tons	Net tons	\$
1944					
Basic.....	1,375,586	158,554	1,534,140	89,879	1,846,009
Foundry.....		143,763	143,763	143,498	3,091,233
Malleable.....		174,725	174,725	166,633	3,704,253
Total.....	1,375,586	477,042	1,852,628	400,010	8,641,495
1945					
Basic.....	1,292,264	127,941	1,420,205	82,329	1,676,071
Foundry.....		198,244	198,244	195,371	4,195,823
Malleable.....		159,500	159,500	151,202	3,655,132
Total.....	1,292,264	485,685	1,777,949	428,902	9,527,026

NOTE.—Silvery pig iron has been included with ferro-alloys.

Table 185.—Imports into Canada and Exports of Pig Iron, 1935-1945

	Imports		Exports	
	Net tons	\$	Net tons	\$
1935.....	9,990	143,726	15,410	287,396
1936.....	4,435	74,589	15,572	304,682
1937.....	7,135	144,354	43,138	851,701
1938.....	2,377	62,494	11,811	224,261
1939.....	657	15,176	12,015	221,787
1940.....	29,703	672,489	4,113	101,126
1941.....	4,729	131,112	380	10,090
1942.....	1,636	42,718	427	12,175
1943.....	7,118	173,598	438	11,163
1944.....	8,516	235,066	5,696	123,681
1945.....	7,589	231,062	21,854	493,159

Table 186.—Consumption of Pig Iron in Canada, by Industries and by Provinces, 1942-1945 (as reported by consumers)

	1942	1943	1944	1945
	Net tons	Net tons	Net tons	Net tons
(a) By INDUSTRIES				
Steel ingots and castings.....	1,615,396	1,518,548	1,513,586	1,416,844
Iron castings.....	176,199	169,272	171,397	173,185
Boilers, tanks and platework.....	18,867	27,593	27,897	36,476
Agricultural implements.....	21,884	17,483	17,511	26,521
Machinery.....	23,449	21,011	21,170	22,149
Automobiles.....	6,545	.....	5,197	5,197
Automobile parts.....	16,014	12,785	35,540	10,641
Railway rolling stock.....	25,517	24,518	31,638	28,234
Brass and copper products.....	2,247	1,461	1,104	2,170
Shipbuilding.....	743	1,233	1,749	3,488
Hardware and tools.....	2,548	1,966	2,205	3,223
Miscellaneous iron and steel.....	203	713	673	775
Heating and cooking apparatus.....	18,846	24,601	23,087	26,321
Electrical apparatus and supplies.....	2,148	2,150	2,954	4,426
Total.....	1,930,602	1,823,334	1,855,708	1,759,650
(b) By PROVINCES				
Prince Edward Island.....	40	65	80	97
Nova Scotia.....	441,813	384,528	393,008	393,291
New Brunswick.....	3,211	3,723	3,450	4,413
Quebec.....	67,255	73,992	73,022	101,107
Ontario.....	1,411,531	1,350,304	1,378,233	1,245,198
Manitoba.....	5,270	4,948	2,770	7,679
Saskatchewan.....	43	.....	115	58
Alberta.....	177	120	76	164
British Columbia.....	1,302	5,654	4,954	7,643
Canada.....	1,930,642	1,823,334	1,855,708	1,759,650

Table 187.—Production of Ferro-Alloys, 1935-1945

Year	Net tons	Year	Net tons
1935.....	63,410	1941.....	204,354
1936.....	85,438	1942.....	209,017
1937.....	91,921	1943.....	197,094
1938.....	62,637	1944.....	171,323
1939.....	85,540	1945.....	178,109
1940.....	149,394		

Table 188.—Production of Steel Ingots and Steel Castings and Sales by the Producers, 1944 and 1945

	1944			1945		
	Total tonnage of steel made (all kinds) including alloys	Sales		Total tonnage of steel made (all kinds) including alloys	Sales	
		Quantity	Income from sales		Quantity	Income from sales
	Net tons	Net tons	\$	Net tons	Net tons	\$
STEEL INGOTS—						
Basic open hearth.....	2,517,894	16,526	623,048	2,399,858	23,488	882,918
Electric.....	355,974	17,081	2,003,054	357,291	21,784	2,490,922
Total Steel Ingots.....	2,873,868	33,607	2,626,102	2,757,149	45,272	3,373,840
STEEL CASTINGS—						
Basic open hearth.....	35,032	33,607	5,900,114	31,216	31,365	6,532,300
Converter.....	2,470	2,527	680,781	974	.....	276,265
Electric.....	104,792	101,331	25,641,368	88,620	70,636	17,939,318
Total Steel Castings.....	142,294	137,465	32,222,263	120,778	102,975	24,747,883
Total steel ingots and castings	3,016,162	171,072	34,848,365	2,877,927	148,247	28,121,723
Any other products.....	.....	7,608	1,106,958	.....	23,033	3,242,415
Total all products.....	.....	178,680	35,955,323	.....	171,280	31,364,138
Alloy steel included in above—						
Ingots.....	328,640	7,657	900,000	305,542	4,569	702,610
Castings.....	19,263	18,946	6,610,679	14,022	10,563	3,369,705
Total.....	347,903	26,603	7,510,679	319,564	15,132	4,072,315

Table 189.—Materials Used in Steel Furnaces, 1944 and 1945

Material	1944		1945	
	Quantity	Cost of purchased materials	Quantity	Cost of purchased materials
	Net tons	\$	Net tons	\$
Pig iron—Own make.....	1,439,310		1,363,495	
Purchased.....	74,276	1,694,085	53,349	1,243,241
Scrap iron or steel—Own make.....	887,513		876,275	
Purchased.....	754,737	15,661,279	865,620	15,370,285
Spiegeleisen.....	1,708	85,728	3,404	171,614
Silicospiegeleisen.....	358	28,330	176	14,670
Ferromanganese—High carbon.....			5,585	656,257
Medium carbon.....			14,046	1,726,290
Low carbon.....	20,224	2,510,354	565	96,335
Silicomanganese.....			7,967	899,689
Ferrosilicon—15%.....	9,014	1,018,475	2,319	124,723
25%.....			1,049	63,059
50%.....			6,426	427,822
75%.....	11,055	692,370	202	24,897
85-90%.....			212	30,815
Ferrochrome (including chrom-x)—High carbon.....	3,154	453,650	1,582	323,694
Low carbon.....	1,018	404,976	1,173	436,469
Ferromolybdenum.....	93	142,067	71	110,897
Ferrophosphorus.....	405	35,533	423	37,101
Ferroselenium.....	2	4,406	1	2,277
Ferrotitanium.....	786	149,527	656	123,975
Ferrotungsten.....	86	287,116	138	455,317
Ferrovandium.....	67	176,596	57	188,661
Ferrozirconium.....	15	1,613	5	836
Calcium silicon.....	241	76,374	206	67,130
Calcium manganese silicon.....	575	188,312	589	193,020
Other ferro-alloys.....		401		943
Aluminum ingot and shot.....	933	289,021	828	197,132
Copper ingots, cakes, shot, etc.....	95	20,451	131	30,023
Nickel.....	1,692	1,124,382	1,523	916,645
Other metals.....		79,024		75,189
Ore, iron, crude.....	154,217	1,203,977	105,734	1,063,070
Ore, iron, calcined, roasted or treated.....	198	1,004	880	5,434
Ore, manganese.....	25	562		
Ore, chrome.....	1,204	56,831	745	35,998
Ore, tungsten.....	124	232,683	197	395,674
Bentonite.....	3,745	88,527	3,161	83,424
Coal, anthracite.....	653	6,993	309	4,005
bituminous.....	6	236	323	3,655
Coke—Purchased.....	4,685	51,659	4,512	53,032
Charcoal.....	199	8,034	145	6,713
Dolomite, Crude.....	77,085	199,774	71,060	209,716
Calcined.....	8,516	125,990	6,146	111,581
Fluorspar.....	20,024	692,104	19,462	669,813
Ganister.....	6,009	22,015	5,568	17,948
Graphite.....	386	42,498	526	55,955
Lime.....	63,721	450,533	64,264	436,239
Limestone—Canadian.....	86,216	143,050	94,010	158,008
Imported.....	150,951	241,133	123,489	159,971
Magnesite.....	18,665	740,450	17,016	680,588
Electrodes.....		952,084		929,529
Silica sand—For moulds.....	87,273	613,332	75,619	512,843
For sand blasting.....	2,534	33,509	5,260	51,508
Other foundry sands.....		73,740		80,691
Firebrick, fireclay and other refractories.....		2,358,681		2,287,145
Calcium molybdate.....	166	176,572	115	116,753
Molybdenum trioxide (molybdic oxide) briquettes.....	537	749,582	314	517,133
All other materials.....		2,406,119		2,936,078
Total value of metals, ores and other materials used.....		36,800,822		35,589,520

Table 190.—Summary of Steel Furnace Capacity, December 31, 1945

	Number of furnaces	Total annual capacity (net tons)
Basic open hearth.....	49	2,796,876
Electric.....	81	755,496
Converter.....	3	8,200
Total.....	133	3,560,572
Steel ingots—Basic open hearth.....		2,745,300
Electric.....		460,990
Total.....		3,206,290
Steel castings.....		354,282
Total Ingots and Castings.....		3,560,572

LITHIUM

(From the Annual Reviews of the Bureau of Mines, Ottawa)

Amblygonite, spodumene, and lepidolite are the chief lithium minerals of commerce: their ores contain, respectively, about 8, 6, and 4 per cent of lithium oxide. Spodumene is in greatest supply, and is the base raw material for the manufacture of many lithium salts, lithium metal, and alloys. Amblygonite has similar uses, but is scarcer and more expensive. Lepidolite, or lithia mica, is employed mainly in the natural state as a batch ingredient in glass. The occurrence of all three minerals is confined to pegmatite dykes of a definite type, which usually have a localized, regional distribution and often carry, also, important amounts of beryl and tantalite-columbite. In some cases, such dykes have been worked for the recovery of all of these minerals.

There has been no recorded production of lithium minerals in Canada since 1937, when 32 tons of amblygonite and spodumene valued at about \$1,700 was shipped, and little if any lithium ore is known to be used or required for any purpose in the Dominion. Thus, an outside market would have to be found for any production. Considerable development work has been done in recent years, however, on deposits in the Pointe du Bois area in southeastern Manitoba; and in the three years ended 1944 increased interest was shown in the commercial possibilities of lithium deposits in other sections of that province, though activities have been confined to exploratory drilling. Some attention has been given, also, to lithium-bearing deposits in the Yellowknife-Beaulieu area in the Northwest Territories.

Lithium ores and compounds early became of strategic importance in the present war, and to conserve supply for defence needs the United States Government placed both under allocation control in 1942. Government assistance also was given to the establishment of two spodumene mills, one in North Carolina, and the other in South Dakota.

All of the small Canadian production of lithium minerals has come from the Pointe du Bois area in Manitoba. Lithium Corporation of Canada, 409 Avenue Building, Winnipeg, is the company that has been most actively interested in furthering the development of the lithium-bearing pegmatites in the area, and it has carried out considerable work on its holdings, mainly on those at Bernic Lake. It mined and stockpiled about 50 tons of mixed ore in 1941, but was inactive during 1942-45. The material taken out in 1941 comprised about equal amounts of cobbled amblygonite and spodumene, and included also a few tons of triphylite, a phosphate of lithium and iron, containing, theoretically, about 9 per cent of lithium oxide.

Lithium is the lightest of the metals, having a specific gravity of only 0.53. A wide range of master alloys of lithium with calcium, silicon, brass, copper, manganese, zinc, lead, tin, magnesium, and aluminum has been developed in the United States. The alloys are being used to an increasing extent as deoxidizing, degasifying, and desulphurizing agents in copper, brasses, bronzes, etc.; as scavengers for cast iron and in the refining of high-carbon steel; and for the hardening of lead and aluminum. Alloys of lithium with zinc, aluminum, and magnesium are strong and highly resistant to corrosion.

Prices of lithium minerals in 1945 showed little change from those of the previous year. Amblygonite, 8 to 9 per cent Li_2O , was quoted at \$40 to \$50 per ton; spodumene, 6 per cent grade, at \$5 to \$6 per unit for mill concentrates; and lepidolite, 3 per cent Li_2O at \$25 per ton, all f.o.b. mines. Lithium metal was changed from \$15 per pound to \$12.50 per pound.

There are no plants in Canada for the chemical treatment of lithium ores. Most of the world production marketed prior to the war was treated by a few large chemical firms specializing in the business, the principal plants being in the United States, Great Britain, Germany and France. Such firms usually purchased their requirements under individual contract, and there has thus been little in the way of an open market, price quotations given in trade journals being merely nominal. Some of the larger consumers own and operate their own mines.

MAGNESIUM

Production of magnesium in Canada, in common with that in other countries, showed a marked decrease after the war. The only Canadian producer, Dominion Magnesium, Limited, at Haley's (near Renfrew), Ontario, ceased operations in August after accumulating a large stock of metal and alloys. Shortly after the end of the war in Europe the plant was purchased from the Canadian Government by the operating company and extensive changes in equipment were under way at the close of the year. The magnesium powder plant of the Consolidated Mining and Smelting Company of Canada, Limited, at Trail, British Columbia, in which magnesium powder was made from purchased ingots, was also closed after the war. Magnesium foundries were operated in 1945 by Aluminum Company of Canada, Limited, at Toronto and Etobicoke; by Robert Mitchell Company, Limited, at Montreal; and by Light Alloys Limited at Renfrew.

Dolomite, the double carbonate of calcium and magnesium, and which contains 13 per cent of magnesium, is found in all provinces of Canada except Prince Edward Island. It is particularly abundant in Ontario and Manitoba.

Magnesite, the carbonate of magnesium, containing 28.7 per cent magnesium, and hydromagnesite, containing 26.5 per cent of magnesium, are available in British Columbia. Deposits of magnesitic dolomite consisting of an intimate mixture of magnesite and dolomite occur in Argenteuil county, Quebec, where they are being worked for the production of basic refractories. The magnesite deposits in British Columbia are undeveloped, but magnesium has been made from them on an experimental scale. Magnesitic dolomite possesses no advantages over dolomite or magnesite as a source of magnesium.

Brucite, in the form of granules 1 to 4 mm. in diameter thickly disseminated throughout crystalline limestone and forming 20 to 35 per cent of the volume of the rock, occurs in large deposits in Ontario and Quebec. Brucite is the hydroxide of magnesium and contains 41.6 per cent of magnesium. The Canadian deposits are the largest known in the world. The brucite is being recovered in the form of granules of magnesia from one of these deposits near Wakefield, Quebec, and though the granular magnesia so obtained is being used principally for the manufacture of basic refractories and as an ingredient in chemical fertilizers, it is a very suitable raw material for the production of magnesium metal.

Serpentine, the silicate of magnesium, contains 25.8 per cent of magnesium, and occurs in many deposits throughout Canada. It is also available in huge waste dumps aggregating probably 100,000,000 tons in the asbestos-producing region of Quebec. The average magnesium content of these dumps is about 23 per cent. A process has been worked out for the recovery of magnesium from serpentine.

Sea-water, although it contains only 0.13 per cent magnesium, is a source of the metal in England and the United States. Dolomitic lime is used to precipitate the magnesia from the sea-water in the form of hydroxide, and the magnesia from both is recovered in the process.

Underground brines containing MgCl_2 and residual brines from salt-making operations, containing MgCl_2 , are used in the United States as sources of magnesia and magnesium, but brines containing sufficient MgCl_2 to render them of value are not available in Canada.

Processes for the production of the metal from the various raw materials may be divided into two groups, namely, electrolytic, and thermal. The electrolytic process provides most of the magnesium made, except in Canada where a thermal reduction process is used. The three thermal reduction processes in use throughout the world involve reduction of magnesia with carbon (in use in the United States); reduction of magnesia with calcium carbide (in use in the United Kingdom); and reduction of calcined dolomite with ferrosilicon (in use in Canada, the United States, and Italy).

The field of usefulness of magnesium is steadily expanding. Magnesium was formerly used almost exclusively in pyrotechnics, but it is used also as a structural metal, particularly in the form of castings and extruded shapes. For structural use it is alloyed with various portions of other elements. It is used as a constituent in many aluminum-base alloys.

The price quoted by Engineering and Mining Journal for magnesium in ingot form in carload lots during 1945 was 20½ cents per pound, U.S. currency, f.o.b. New York.

Table 191.—Production of Primary Magnesium Metal in Canada, 1916-18 and 1941-45

Year	Quebec		Ontario		British Columbia		Canada	
	Pounds	\$	Pounds	\$	Pounds	\$	Pounds	\$
1916-1918.....	(a)	(a)			(b) 200,000	(b)		
1941.....					(c) 10,905	2,944	10,905	2,944
1942.....	(d) 141,081	62,076	473,910	208,520	193,727	85,240	808,718	355,836
1943.....			7,153,974	2,074,652			7,153,974	2,074,652
1944.....			10,579,778	2,575,695			10,579,778	2,575,695
1945.....			7,358,545	1,607,264			7,358,545	1,607,264

(a) Magnesium metal produced in 1918 at Shawinigan Falls, Quebec, by Shawinigan Electro Metals Company Limited from imported magnesium chloride but data not available.
(b) Approximately 200,000 pounds produced at Trail from imported magnesium chloride; complete data not available.
(c) Powder.
(d) Produced in Ontario from Quebec brucite.

Table 192.—Consumption of Magnesium Ingots in Canada

	1941	1942	1943	1944	1945
	(pounds)				
In non-ferrous smelters.....	825,717	1,072,346	1,298,650	1,480,528	487,773
In white metal alloy foundries.....	9,515	9,850	16,821	55,496	37,740
In brass and bronze foundries.....	42,821	44,553	132,465	51,040	66,116
In aluminum products.....	127		89,523	34,930	45,452
Total accounted for.....	878,180	1,126,749	1,537,459	1,621,994	637,081

MANGANESE

(From a Report by the Bureau of Mines, Ottawa)

All manganese properties in Canada were inactive in 1944 and 1945. The small Canadian production in the past came mainly from deposits in the Maritime Provinces. Known deposits of high-grade manganese in Canada are small and are almost exhausted. No commercial grade deposits have been found and future production appears to be unlikely unless sufficient manganese is disclosed during the operation of the iron deposits of Steep Rock Iron Mines, Limited, west of Port Arthur, Ontario, to warrant its recovery as a by-product. Consumption is steadily increasing, however, as adequate supplies of high quality ore can now be obtained from foreign deposits, the output from which was restricted during the war.

World production of manganese ore is estimated to be between five and six million tons annually, the leading producing countries being Russia, British India, Gold Coast, United States, Union of South Africa, Brazil, and Cuba. Prior to the last war, Russia was the source of nearly half the world production, the principal deposits being in the Republic of Georgia and Ukraine. During the last quarter of 1945 Russia was the largest individual shipper of manganese ore to the United States.

The Canadian imports of manganese oxide amounted to 198,277 tons valued at \$4,571,592 compared with 85,795 tons at \$2,370,109 in 1944. Most of this ore is used in making ferro-manganese, spiegeleisen and other manganese alloys for the domestic iron and steel industries and for export. The dry cell battery industry in Canada used 3,550 tons of battery grade ore in 1945.

Table 193.—Production of Manganese Ore in Canada for Years Specified, 1915-1945

Year	Tons	Value	Year	Tons	Value
1915.....	201	\$ 9,360	1936.....	221	\$ 1,596
1916.....	957	89,544	1937.....	85	817
1917.....	158	14,836	1938.....		
1918.....	440	6,230	1939.....	396	3,688
1924.....	584	4,088	1940.....	152	4,315
1925-1929.....			1941.....	(*)	(*)
1930.....	273	1,356	1942.....	435	8,932
1931.....	117	2,893	1943.....	48	985
1932-1934.....			1944.....		
1935.....	100	800	1945.....		

(*) 7,500 pounds manganese metal produced at the mine from Nova Scotia manganese ore.

Table 194.—Imports of Manganese Ore into Canada, 1935-1945

Year	Tons	\$
1935.....	36,780	353,414
1936.....	64,262	684,175
1937.....	77,226	802,269
1938.....	21,050	463,673
1939.....	29,787	621,931
1940.....	70,460	777,416
1941.....	104,473	1,170,768
1942.....	57,389	860,248
1943.....	51,234	1,445,252
1944.....	85,795	2,370,109
1945.....	198,277	4,571,592

Table 195.—Imports of Manganese Ore into Canada, by Principal Countries, 1943-1945

From	1943 (tons)	1944 (tons)	1945 (tons)
Gold Coast.....	20,663	42,442	182,779
British India.....	2,325	33,832	11,927
Chile.....		2,493	
French Africa.....	2,469		
United States.....	25,774	7,024	3,569
United Kingdom.....	3	4	2
Total Imports.....	51,234	85,795	198,277

MERCURY

No mercury has been produced in Canada since the summer of 1944, all shipments in 1945 being from stock. All of the Canadian production has come from the Pinchi mine of the Consolidated Mining and Smelting Company of Canada, Limited, and from the Takla property of Bralorne Mines Limited, both of these mines being in the Omineca Mining Division, British Columbia. The Pinchi mine was the largest single producer of mercury in the western hemisphere.

The controlled price for mercury in the United States early in 1944 was \$176 per flask. This dropped to \$96 by midsummer, rose to \$140 in December, and to \$160 in February, 1945. This rise was traceable to sudden demand for battery use. Large quantities of mercury then became available from Spain and the price dropped to \$96 in September. Ceiling price restrictions in the United States were suspended in late August and the purchase of surplus mercury stocks by the government caused an upward swing at the end of the year to \$108. The price in March 1946 was \$105. In 1938 the average price was \$75 per flask.

If the expected large scale production of the mercury dry cell for civilian use materializes, the demand for the metal will increase, but production from Spain and Italy will soon be back to normal, and imports from Europe and other countries will not be restricted. These circumstances, together with a price of only half that obtained in 1943, do not encourage the reopening of Canadian mercury mines.

Table 196.—Production of Mercury in Canada, 1895-1945

Year	Pounds	\$	Year	Pounds	\$
1895.....	5,396	2,343	1940.....	153,830	369,317
1896.....	4,408	1,940	1941.....	536,304	1,335,697
1897.....	684	324	1942.....	1,035,914	2,943,807
1924-1927(*).....	380	(*)	1943.....	1,690,240	4,559,200
1938.....	760	760	1944.....	735,908	1,210,375
1939.....	436	1,226	1945.....		

(*) Data from a report issued by Bureau of Mines, Ottawa; value not recorded.

Table 197.—Production of Mercury in Canada, Consumption, Imports and Exports, 1939-1945

Year	Production in Canada	Consumption in Canada	Imports	Exports
	(Pounds)	(Pounds)	(Pounds)	(Pounds)
1939.....	436	89,617	109,232	.....
1940.....	153,830	75,643	78,597	108,000
1941.....	536,304	151,351	8,599	360,164
1942.....	1,035,196	185,118	1,971	692,753
1943.....	1,690,240	201,982	2,047	1,304,692
1944.....	735,908	130,515	35,428	362,670
1945.....	.....	100,700	27,101	261,720

Table 198.—Consumption of Mercury in Canada by Principal Uses, 1939-1945

Industries	1939	1940	1941	1942	1943	1944	1945
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
Pharmaceuticals and fine chemicals.....	20,473	30,246	70,826	78,362	79,786	24,307	20,652
Heavy chemicals.....	53,954	30,904	35,520	50,968	72,531	78,300	53,701
Electrical apparatus.....	2,161	1,899	25,738	42,313	30,065	4,652	4,500
Gold mines.....	6,313	6,000	11,091	*10,000	*10,000	*10,000	*10,000
Miscellaneous.....	1,716	6,594	8,176	3,475	9,600	13,256	11,847
Total.....	89,617	75,643	151,351	185,118	201,982	130,515	100,700

*Estimated.

MOLYBDENITE

During 1945 production was maintained only from the LaCorne mine in LaCorne township, Quebec. From July, 1942, to July, 1945, the mine was operated by Wartime Metals Corporation, after which the property and all assets were taken over by the original owners, Molybdenite Corporation of Canada, who carried on without interruption with Wartime Metals personnel. Since July, concentrates have been sold in the open market, prior to which they were shipped through the Metals Controller and under contract to Climax Molybdenum Company, Langeloth, Pennsylvania, for conversion into oxide or ferromolybdenum, and equivalent amounts of these products were shipped by that company to Railway and Power Engineering Company, Toronto, the distributor for Canada. As there are no plants in Canada to convert the concentrate into addition agents, there is no sale for concentrate in Canada. Sales to the United States are likely to be barred because of tariffs, large productive capacity, and surplus stocks in that country. A considerable European demand for concentrate may develop, however, in connection with the manufacture of structural and engineering molybdenum steels and with other new fields of use, such as electronics. However, Canadian concentrate must meet strong competition from United States sources.

Molybdenite, the chief ore of molybdenum, is a soft and shiny steel blue-grey sulphide containing 60 per cent of the metal. In eastern Canada it is usually found in pegmatite dykes or along the contacts of limestone and gneiss, commonly associated with greenish grey pyroxenites in which other metallic minerals such as pyrite and pyrrhotite often occur. In northern and western Ontario, Quebec, and in British Columbia, molybdenite usually occurs in quartz or in quartz veins, along the contacts of, or intruded into granites, or diorites. It generally occurs in the form of soft, pliable flakes or leaves, but it is sometimes semi-amorphous, filling cracks and smearing the rock surface. It can be readily distinguished in the field by the olive-grey-green smear it leaves when rubbed on glazed white porcelain or enamel. Graphite, for which it is often mistaken, leaves a grey-black smear.

The LaCorne mine, source of the output in 1945, is being developed to a depth of 500 feet on four levels. Two distinct types of ore occur. The east-west veins, which were first worked, are quartz veins; the north-south veins, which are richer and wider, are characterized by the presence of red feldspar. A zone of good grade ore averaging 0.8 per cent MoS₂ was struck at

the bottom of the shaft. About 300 tons of ore averaging 0.65 per cent MoS_2 are being milled daily. The company is erecting a plant to extract the bismuth from the concentrate and is considering the installation of a plant to convert the concentrate into oxide.

Indian Molybdenum Limited (Dome Mines Limited) closed its property in Preissac township, Quebec, in April 1944, and Quyon Molybdenite Company's mine near Quyon, Quebec, was also closed early in 1944.

At least 400 molybdenite deposits and occurrences are known in Canada, distributed in all provinces except Alberta. Present indications, however, are that the Abitibi area in Quebec will continue to be the principal source of production. The area is about 100 miles from the Ontario boundary and in general, extends from Rouyn to Val d'Or. It is probably one of the most favourable areas for the discovery of other workable deposits.

Molybdenite concentrate is converted into an addition agent that is introduced into steel as molybdenum trioxide, ferromolybdenum, or to a small extent as calcium molybdate. The oxide is usually moulded into briquettes which weigh 5 pounds each, and contain $2\frac{1}{2}$ pounds of molybdenum.

Molybdenum has a widening range of uses, but by far the greater part of the output is used in steel to intensify the effect of other alloying metals, particularly nickel, chromium, and vanadium. These steels usually contain from 0.15 to 0.4 per cent molybdenum, but in some instances the percentage is considerably higher. For high-speed tool-steels as much as 9 per cent is added.

Molybdenum alloys are used widely for the hard-wearing and other important parts of aeroplanes. They are used in the automobile industry, in high-grade structural die and stainless steels; and to some extent in high-speed tool-steels. Molybdenum is used in cast iron and in permanent magnets. Much molybdenum wire and sheet is used in the radio industry; and new alloys suitable for electrical resistance and contacts and for heating elements contain molybdenum.

The chemical uses continue to increase, and the salts are used in pigments, in vitreous enamels for coating steels and sheet iron, in welding rod coatings, and for analytical work.

United States specifications for concentrate dried at 212°F . are: MoS_2 , minimum 85 per cent; copper, maximum 0.6 per cent; iron, maximum 3.0 per cent; combined phosphorus, antimony and tin, maxima 0.2 per cent.

There is no Canadian market for concentrates as there are no conversion plants, and since July 1945 the only shipments have been to Europe at a price of $42\frac{1}{2}$ cents per pound.

The price per pound of contained molybdenum, f.o.b. Toronto, in Canadian funds, for the following imported compounds is approximately: calcium molybdate (42 per cent Mo), 90 cents; ferromolybdenum (60 per cent Mo), \$1.13 and molybdic oxide (52 per cent Mo), 90 cents. Calcium molybdate is sold in bags of about $12\frac{1}{2}$ pounds containing exactly 5 pounds of molybdenum. (Bureau of Mines, Ottawa.)

Table 199.—Molybdenite Mining in Canada, 1943-1945

	1943	1944	1945
Active firms.....No.	12	4	3
Capital.....\$	3,672,813	(*)	(*)
Employees—On salary.....No.	38	31	21
Wage-earners.....No.	221	148	98
Total.....No.	259	179	119
Salaries and wages—Salaries.....\$	82,319	62,954	34,295
Wages.....\$	394,952	332,512	189,729
Total.....\$	477,271	395,466	224,024
Gross value of production.....\$	549,515	1,079,698	411,663
Fuel and electricity used.....\$	73,961	54,614	34,991
Process and supplies used.....\$	81,072	103,774	35,736
Freight and treatment charges.....\$	3,249	72,681	42,613
Net value of production.....\$	391,219	848,629	113,340

(*) Data not recorded in 1944 and 1945.

Table 200.—Production of Molybdenite in Canada, 1902-1945

Year	Ores milled	Ores and concentrates shipped or used		Total MoS ₂ content of shipments
	Tons	Tons	Value (a)	Pounds
			\$	
1902.....	(c) 3	3.3	400	(b)
1903.....	(c) 600	85.0	1,275	(b)
1904-1913.....				
1914.....	(c) 166	16.5	2,063	3,814
1915.....	216	39.0	28,920	29,210
1916.....	9,100	610.0	188,316	156,461
1917.....	22,605	1,554.3	320,006	330,316
1918.....	33,935	461.3	428,807	378,482
1919.....	6,783	46.0	69,203	83,002
1920-1923.....				
1924.....	668	10.0	9,370	18,739
1925.....	2,779	15.3	11,176	22,350
1926.....	4,490	12.6	10,472	20,943
1927.....				
1928.....				
1929.....	2,900	9.5	6,400	16,150
1930.....				
1931.....	12	0.61	280	1,222
1932-1936.....				
1937.....	5,307	8.25	8,147	(b)
1938.....	(b)	6.5	4,500	(b)
1939.....	1,492	1.3	816	(b)
1940.....	3,936	11.1	10,280	(b)
1941.....	28,100	98.3	88,470	173,991
1942.....	39,708	113.7	134,963	158,780
1943.....	120,576	392.4	549,515	653,200
1944.....	187,130	1,064.0	1,079,698	1,870,132
1945.....	80,575	489.1	411,663	839,419

(a) Value as given by the operators 1902 to 1939; 1940-1945 value estimated using market or Government prices.

(b) Not known.

(c) Mines.

PITCHBLEND

Pitchblende, the ore from which radium and uranium products are made, is mined in Canada only in the Great Bear district of the Northwest Territories.

An atomic bomb, possessing more power than 20,000 tons of T.N.T. was dropped on Japan by an American airplane on August 6, 1945. The news, released by President Truman, also broke the silence imposed on all concerned on the part that uranium has played in what is described as the outstanding scientific discovery of all time. That the uranium atom had been split in two was known for some time, but knowledge of the feverish activity to apply this source of "cosmic" energy was a deep military secret. Research and work on the project in the United States cost more than \$2,000,000,000. Available supplies of uranium ore mined in Canada and the United States were taken over by the military authorities soon after Pearl Harbour and an open market in the mineral ceased to exist. Before the war uranium and uranium salts were used in the manufacture of luminous dials and other products, in the ceramics and glass industries, and in photography.

Statistics with regard to the production and refining of pitchblende ores are not available for publication.

SELENIUM

Selenium is fairly widely distributed, but in no case does it occur in quantity large enough to be mined for itself alone. It is not widely used in industry though new uses are being steadily developed. Canada and the United States are the principal sources of supply.

In Canada selenium is recovered during the refining of blister copper produced in Manitoba, Ontario, and Quebec, and was first produced in the Dominion in 1931 in the copper refinery of International Nickel Company of Canada at Copper Cliff, Ontario. The only other producer is Canadian Copper Refiners, Limited, with refinery at Montreal East, Quebec, where production was commenced in November, 1934. The Copper Cliff product is derived from the treatment of the copper-nickel ore of the Sudbury district, and at Montreal East the selenium by-product

is obtained from the treatment of the gold-copper ore of Noranda, Quebec, and the gold-copper-zinc ore of the Flin-Flon mine on the boundary line between Manitoba and Saskatchewan. The plant at Montreal East is the largest producer of selenium in the world.

A plant for the manufacture of selenium compounds was erected in 1944 at Montreal East by Canadian Copper Refiners, Limited. The compounds being made in addition to refined selenium are double distilled selenium, C.P. selenium, commercial selenium dioxide, sodium selenite, and sodium selenate.

Selenium is marketed as a black to steel-grey amorphous powder, but cakes and sticks are also obtainable. Among the other products are ferroselenium, sodium selenite, selenious acid, and selenium dioxide. The most important outlets for selenium prior to the war were in glass, rubber, and paint industries. The greatest single development in the utilization of selenium since 1939 has been in its use in electrical rectifiers that played such an important role in connection with radar and with generators for aeroplanes and army field equipment. Considerable quantities are being used as accelerators in the vulcanization of synthetic rubber. Selenium is used to develop free machining qualities in stainless metal and as an ingredient of austenitic chromium steels. For the latter purpose it is supplied in bars of selenium-bearing stainless metal.

Selenium is useful in producing good ruby glass; is a quality-improver in lubricating oil; and is a potent ingredient of anti-fouling paints for ship bottoms.

Since 1938, the nominal price for selenium, black powdered, 99.5 per cent pure, at New York, has been \$1.75 per pound.

Table 201.—Production of Selenium in Canada, 1931-1945

Year	Pounds	\$	Year	Pounds	\$
1931(*)	21,500	40,850	1939	150,771	266,714
1932			1940	179,860	343,533
1933	48,221	70,345	1941	406,930	777,236
1934	104,924	171,311	1942	495,369	951,108
1935	366,425	703,536	1943	374,013	654,523
1936	350,857	621,017	1944	298,592	537,466
1937	397,227	687,203	1945	379,187	728,039
1938	358,929	622,742			

(*) First commercial production in Canada.

TANTALUM-COLUMBIUM

Canada produces no tantalite or columbite and according to the Bureau of Mines, Ottawa, the known Canadian occurrences of these minerals are scarce and of undetermined economic interest. The minerals tantalite and columbite are the tantalate and columbate, respectively, of iron and manganese, with the general formula (Fe, Mn) (Ta, Nb)₂O₆. They grade one into the other according as whether tantalum or columbium predominates. Both tantalite and columbite were of increasing importance in the war effort and tantalite was placed in the group of "strategic" minerals having the highest priority rating. The occurrence of all tantalum-columbium minerals is restricted to granite-pegmatites, or to residual or alluvial deposits derived from such rock. The chief world sources of tantalite proper have been Western Australia, Belgian Congo, Southern Rhodesia, Uganda, United States and Brazil. The supply of columbite has come mainly from Nigeria, Belgian Congo, Southwest Africa, Argentina and Brazil. The annual world output of tantalite-columbite is small and complete data on same are not available at present. Tantalum metal is highly resistant to corrosion and possesses remarkable conductivity for heat; one of its important uses is in equipment, such as stills, condensers, tubes and heaters in chemical plants and laboratories; it is being used to an increasing extent in the field of electronics. Columbium is employed chiefly as an alloying component in various special-purpose steels, and also in copper, aluminum and other metals.

There are no users of tantalum or columbium ores in Canada, the chief world market being in the United States. The principal American consumer-buyer of tantalite is Fansteel Metallurgical Corporation, North Chicago, Illinois, and of columbite, Electro-Metallurgical Company,

30 East 42nd Street, New York City. These companies have been pioneers in the fields of industrial applications for tantalum and columbium metals, alloys, and products, respectively, and are the leading companies engaged in treating the ores.

United States quotations for tantalum ore, August, 1945, were, per pound Ta_2O_5 , \$2 to \$3 for 60 per cent concentrate, the price depending on the source. Columbium metal, per kilo, base prices: rod \$560; sheet \$500. Tantalum metal, per kilo, base prices, \$160.60 for C.P. rod; sheet \$143; discounts on volume business.

TELLURIUM

Tellurium was first produced in Canada in 1934 at Copper Cliff, Ontario, by International Nickel Company of Canada, Limited. The only other producer, Canadian Copper Refiners, Limited, started production in 1935 at its plant in Montreal East, Quebec. The former plant treats the slime from the refining of the blister copper produced by International Nickel Company at Copper Cliff; and the latter, the slime from the refining of anode copper of Noranda Mines, Limited, Noranda, Quebec, and the blister copper of Hudson Bay Mining and Smelting Company, Flin Flon, Manitoba.

Very finely powdered tellurium is used as rubber-compounding material, this being the most important use of tellurium at present. Small quantities are used as a colouring agent in the ceramic industry. When alloyed with lead the tensile strength and toughness of the lead are increased greatly. Lead alloys containing from 0.1 to 0.5 per cent tellurium have been in use for some time in applications requiring resistance to vibration and corrosion. Tellurium is used for improving the machining qualities of certain steels.

Table 202.—Production of Tellurium in Canada, 1934-1945

Year	Pounds	\$	Year	Pounds	\$
1934(*)	5,130	25,599	1940	3,491	5,607
1935	16,425	32,850	1941	11,453	18,394
1936	35,591	62,997	1942	11,084	17,735
1937	41,496	71,777	1943	8,690	15,050
1938	48,237	82,967	1944	10,661	18,657
1939	2,940	4,769	1945	494	929

(*) First commercial production in Canada.

Table 203.—Consumption of Tellurium Metal in Steel and White Metal Foundries, 1940-1945

Year	Steel Foundries	White Metal Foundries
	(Pounds)	(Pounds)
1940	400	629
1941	185	492
1942	50	612
1943	135	453
1944	398	531
1945		308

THALLIUM

There was no production of thallium during 1945 in Canada. The first commercial production of this element in this country was in 1944, when 128 pounds valued at \$1,690 was contained in residues produced by Hudson Bay Mining and Smelting Company, Limited, at the Flin Flon smelter, Manitoba. These residues were exported for treatment in foreign plants. Thallium metal was quoted in the United States at \$12.50 per pound nominal, September 1945. The element has an atomic weight of 204 and has been used in alloys and glass-making.

TIN

Cassiterite (SnO_2) the only important ore of tin, is a widely distributed mineral, but in only a few countries are the deposits sufficiently large for commercial development. Stannite, a sulphide of copper, iron and tin, is of little importance as an ore.

Canada's production of tin is obtained from the small cassiterite content of the lead-zinc-silver ore of the Sullivan mine of The Consolidated Mining and Smelting Company of Canada, Limited, at Kimberley, British Columbia.

The tin supply situation remained critical throughout the world during 1945, and though there was an increase in the number of mines in production in Malaya, the chief source of supply, in the first quarter of 1946, most operations remained on a restricted scale. In February, 1946, according to "Metal and Mineral Markets" published by the Engineering and Mining Journal, a British mission, which started to investigate the tin situation after Malaya was recaptured by the allies, estimated total 1946 (tin content) production at 12,500 tons. This compares with an average prewar output of approximately 75,000 tons.

An autonomous international body, known as the Combined Tin Committee functions to assure co-operation in the distribution of tin during the period of short world supply. The Committee includes representatives of the United States, United Kingdom, Netherlands, France, and Belgium.

The tin concentration plant of the Consolidated Mining and Smelting Company, Limited, at Kimberley, B.C., has been in operation since March 1, 1941, and its plant for the production of refined tin, also at Kimberley, since April 1942. The tin produced at this plant, and the small domestic recovery of secondary tin are far from sufficient to meet Canadian requirements.

During recent years numerous tin-bearing occurrences were disclosed in Yukon and in the Northwest Territories. Although none of these appears to be of near future economic interest, geological conditions in the regions concerned warrant considerable prospecting attention. Known cassiterite occurrences elsewhere in Canada are not of present economic interest.

Tin is used chiefly in the manufacture of tin plate, mainly for use in making tin cans and containers of all kinds. To conserve supplies, the use of tin in solders and in babbitt metal has been restricted in recent years and there has been wide use of low-tin or virtually tin free solders. Smaller quantities of tin are used in foil, terneplate, type metal, bronze and galvanizing.

The price of tin in New York was fixed at 52 cents a pound in August 1941, and this price prevailed to the end of 1945.

Table 204.—Production of New Tin in Canada, Domestic Consumption, Imports and Exports, 1935-1945

Year	Production in Canada	Domestic consump- tion	Exports	Imports	Stocks at end of period
(Tons of 2,000 pounds)					
1935.....		2,111.....		2,339.....	Not available
1936.....		2,165.....		2,424.....	
1937.....		2,503.....		2,939.....	
1938.....		2,305.....		2,637.....	
1939.....		2,737.....		2,913.....	
1940.....		3,868.....		5,918.....	2,655
1941.....	32.....	6,436.....		8,719.....	4,621
1942.....	619.....	3,571.....		3,601.....	5,120
1943.....	390.....	2,865.....		1,311.....	3,920
1944.....	253.....	3,353.....		1,341.....	2,622
1945.....	425.....	4,108.....		3,597.....	2,555

Table 205.—Production of New Tin in Canada, 1941-1945

Year	Pounds	\$
1941(*).....	64,744.....	33,667
1942.....	1,237,863.....	643,689
1943.....	776,937.....	450,623
1944.....	516,626.....	299,643
1945.....	849,983.....	492,990

(*) First commercial production.

Table 206.—Consumption of Tin (Ingots or Bars) in Canada, by Principal Industries, 1939-1945

	1939	1940	1941	1942	1943	1944	1945
	(Tons of 2,000 pounds)						
In white metal foundries (solder, babbitt, etc.).....	1,640	2,087	3,141	1,530	1,264	1,200	1,320
In steel plants (chiefly for tinplate).....	810	1,207	2,346	1,428	1,148	1,517	2,010
In brass and bronze foundries.....	129	277	437	247	200	406	532
In other industries.....	208	297	512	366	253	260	246
Total accounted for.....	2,787	3,868	6,436	3,571	2,865	3,383	4,108

TITANIUM

Titanium-bearing ores found in Canada are of two classes. Ilmenite, containing 30 to 40 per cent TiO_2 occurs in three localities in Quebec. In the St. Urbain district on the St. Lawrence, 60 miles below Quebec City, a part of the ore contains free TiO_2 as rutile mixed with the ilmenite, and its content of TiO_2 reaches 50 per cent and more. The other two deposits are at Ivry, 65 miles north of Montreal, and Allard Lake, 12 miles north of Havre St. Pierre on the Gulf of St. Lawrence.

Titaniferous magnetite, the second class of titanium-bearing ore, is composed of the two minerals, ilmenite and magnetite, mixed intimately in varying proportions, with a content of 5 per cent or more TiO_2 . This ore is more abundant and occurs more widely in Canada than does ilmenite. It is not used in this country at present as a source of titanium. Large deposits occur at Mine Centre in Northwestern Ontario; in the southern part of Hastings county north of Belleville, Ontario; at Desgrosbois, 65 miles north of Montreal; and on the Saguenay River near Arvida, Quebec.

Deposits of magnetic beach sands containing titanium occur at a number of places on the north shore of the Gulf of St. Lawrence. An interesting bed of such sand that has been consolidated into solid ore occurs at Burmis, Alberta, just east of the Crowsnest Pass.

Small shipments of ilmenite were made formerly from the Ivry deposit, but during recent years the only production has been from the St. Urbain deposits. The largest potential source of ilmenite is the recently discovered Allard Lake ilmenite deposits from which only experimental shipments have been made. These deposits are very large, though their full extent is not yet known. The ore as exposed in hills and ridges contains several million tons above ground level. It averages about 35 per cent TiO_2 , 37 per cent iron, and 3 per cent silica. Its convenient location near ocean port will permit large-scale development when there are sufficient market outlets.

The two principal uses for ilmenite are as an alloying agent in steels, and as a pigment. At Niagara Falls, N.Y., ferro-titanium and ferro-carbon-titanium alloys are made from it for use in improving the quality of steel. By far the larger part of the ilmenite consumed in the world, however, is used to make the pigment, titanium white. New uses for this pigment are being found constantly and the demand continues to increase rapidly. There were reports during the year of a Canadian plant to make titanium white, but no definite action was taken.

To the present the substantial amounts of titanium white used in Canada have been imported from the United States. A part of the ore for the United States plants is produced in the southern states. Normally much of the ore for these plants was Tranvancore sand from India, which is particularly well suited to the process at present in use. When this became unobtainable during the war the McIntyre titaniferous magnetite deposit in New York state was opened and operated on a large scale, but this property has been closed.

The New York quotation for ilmenite remained at \$28 to \$30 per gross ton of 60 per cent TiO_2 f.o.b. Atlantic seaboard. The price for rutile 94 per cent TiO_2 remained at 8 to 10 cents per pound of concentrate. The price of ferro-carbon-titanium f.o.b. plant remained at \$142.50 a ton, and metallic titanium at \$5 to \$5.50 a pound throughout 1945. (Bureau of Mines, Ottawa.)

Table 207.—Production of Titanium Ore in Canada(*), 1927-1945

Year	Short tons	\$	Year	Short tons	\$
1927.....	2,029	8,980	1937.....	4,229	26,432
1928.....	2,244	6,732	1938.....	207	1,449
1929.....	2,748	7,359	1939.....	3,694	21,267
1930.....	412	1,239	1940.....	4,535	24,510
1931.....	1,509	10,261	1941.....	12,651	49,110
1932.....			1942.....	10,031	50,906
1933.....			1943.....	69,437	308,290
1934.....	2,023	14,161	1944.....	33,973	165,195
1935.....	2,288	16,400	1945.....	14,147	67,575
1936.....	2,566	18,318			

(*) All from Quebec.

Table 208.—Imports into Canada of "Antimony Oxide, Titanium Oxide and White Pigments Containing Not Less than 14 Per Cent by Weight of Titanium"

Year	From the United Kingdom		From the United States		Total Imports	
	Pounds	\$	Pounds	\$	Pounds	\$
1937.....	2,220,330	262,660	3,410,121	264,085	5,630,451	4,710,481
1938.....	1,599,659	199,814	4,110,672	312,384	526,745	512,219
1939.....	1,689,329	227,805	7,302,923	574,193	9,003,693	803,198
1940.....	477,912	65,747	8,292,103	717,210	8,700,015	782,957
1941.....	418,962	64,302	12,801,017	1,257,065	13,219,979	1,321,367
1942.....	115,360	27,697	14,527,348	1,395,345	14,642,708	1,423,042
1943.....	33,700	8,094	16,855,800	1,525,368	16,889,500	1,533,462
1944.....			20,174,795	1,871,434	20,174,795	1,871,434
1945.....	79,440	16,752	21,279,636	2,029,137	21,359,076	2,045,889

Table 209.—Consumption of Titanium Oxide in Canada, by Industries, 1944 and 1945

Industry	1944		1945	
	Pounds	Cost at works	Pounds	Cost at works
Paints—		\$		\$
Extended titanium dioxide pigments.....	13,176,631	1,061,614	12,120,296	901,144
Titanium dioxide.....	4,600,654	933,199	6,306,213	1,192,404
Polishes and dressings.....	240,890	35,386	242,834	33,185
Pulp and paper.....	672,000	126,966	770,000	141,028
Linoleum.....	456,735			
Inks.....	39,600	Not	Not	Not
Wallpaper.....	86,000	Not	Not	Not
Rubber goods.....	90,000	available	available	available
Miscellaneous.....	125,000			
Total accounted for.....	19,487,510		19,439,343	

Table 210.—Consumption of Ferrotitanium in Manufacture of Steel in Canada, 1939-1945

Year	Tons	\$
1939.....	118	23,498
1940.....	118	24,233
1941.....	181	52,128
1942.....	439	66,555
1943.....	614	118,416
1944.....	786	149,527
1945.....	656	123,975

TUNGSTEN

The supply of tungsten has been in excess of the demand for the past two years although it was critically short during the war up to the fall of 1943. Canadian production ceased at the end of 1943, since when only the small amounts on hand at the mines have been shipped. Canada's requirements can be adequately supplied from the Emerald property in southern British Columbia if an urgent demand again arises.

Wolframite ($(\text{FeMn})\text{WO}_4$), is the principal ore of tungsten, the next in importance being scheelite (CaWO_4), a calcium tungstate. The former is a dark brown to black, heavy mineral, which contains 76.4 per cent WO_3 (tungsten oxide) when pure, and is not common in Canada. Scheelite, the chief Canadian ore of tungsten, is a heavy, fairly soft, usually buff, but sometimes white mineral with dull lustre, which contains 80.6 per cent WO_3 when pure. It is commonly associated with quartz and frequently occurs in gold-bearing veins and in certain contact metamorphic deposits. It can be detected readily in the dark by its brilliant, pale bluish-white fluorescence under ultra-violet light and purple filter.

During 1941 and 1942 scheelite was obtained from many deposits throughout Canada, most of them small. The three largest producers were Red Rose Mine, south Hazelton, northern British Columbia, the Emerald Mine near Salmo, southern British Columbia, and Hollinger Consolidated Gold Mines, Limited, at Timmins, Ontario.

As an alloying metal in steel, tungsten (usually as ferrotungsten, but sometimes as calcium tungstate or scheelite concentrate) is used essentially to impart hardness and toughness, which are maintained even when the steel is heated to a high temperature. Almost 80 per cent of the consumption of tungsten in the United States is used for the production of high-speed steels for cutting tools, in which tungsten content is 15 to 20 per cent. Alloy steels containing tungsten have been used extensively in making armour plate, armour-piercing projectiles, and other military equipment. The use of tungsten in hard facing compounds is growing. Minor amounts of tungsten are used in steels for dies, valves, and valve seats for internal combustion engines, and for permanent magnets. Stellite, the most known non-ferrous alloy, contains 10 to 15 per cent tungsten with higher percentages of chromium and cobalt, and accounts for about 2 per cent of the tungsten consumed. Tungsten carbide is widely used as an extra hard cutting tool and for projectiles. Pure tungsten is used in lamp filaments (about 1.5 per cent of the total tungsten consumption), in radio tubes, contact points, etc.

Until production ceased late in 1943, all sales of Canadian concentrate were made through the Metals Controller, Ottawa, at a price of \$26.50 a short unit (20 pounds) of WO_3 for scheelite concentrate containing 70 per cent WO_3 (within specifications), delivered at Welland, Ontario. At the end of 1945 prices were \$17.50 per unit of WO_3 for scheelite and \$1.54 per pound of contained tungsten in ferro-tungsten.

The Deloro Mining and Smelting Company of Canada, Limited, Deloro, Ontario, is the principal user of tungsten metal in Canada, and the Atlas Steels, Limited, Welland, Ontario, is the main consumer of tungsten concentrates. The former company makes "Stellite" alloys and the latter produces alloy steels.

Table 211.—Production (Commercial Shipments) of Crude Tungsten Concentrates in Canada, 1912-1945

Year	Pounds	\$	Average per cent WO_3
1912.....	28,000	(a)	72
1917.....	580	234	69.41
1918.....	(c) 27,000	11,700	73.8
1939.....	8,825	4,917	(a)
1940.....	12,002	7,308	70.75
1941.....	(b) 82,846	38,712	51.1
1942.....	520,981	408,275	61.8
1943.....	1,508,621	1,083,538	54.2
1944.....	886,745	245,780	31.9
1945.....	1,153	1,045	68.7

(a) Not recorded.

(b) Includes export of considerable low-grade material to U.S.A.

(c) Included 11 tons produced at Burnt Hill, N.B., with smaller shipments from Yukon, Nova Scotia and Manitoba.

Table 212.—Consumption of Ferrotungsten in Steel Furnaces in Canada, 1938-1945

	Short tons	Cost at works
		\$
1938.....	34	69,806
1939.....	106	173,250
1940.....	376	829,859
1941.....	482	1,003,314
1942.....	203	524,007
1943.....	550	1,721,967
1944.....	86	287,116
1945.....	138	455,317

VANADIUM

Some of the magnetites of the Rainy River district in Ontario are known to contain relatively small quantities of vanadium and some research has been conducted as to its economic recovery. There is no production of either the metal or its ores in Canada at the present time.

The principal occurrences of vanadium are in Arizona, Colorado and Utah in the United States; Minasragra in Peru; Broken Hill in Northern Rhodesia; and Grootfontein district in South West Africa.

The metal is employed chiefly in the manufacture of alloy steels and irons. It is also used in the form of ammonia meta-vanadate as a catalyst in the manufacture of sulphuric acid and in the non-ferrous, glass, ceramic and colour industries.

The United States Bureau of Mines reports that vanadium has been and is now being obtained by some countries from other than vanadium ores, including petroleum, bauxite, phosphate rock and titaniferous magnetites; the ever-increasing demand for vanadium directs attention to all possible vanadium sources, as well as to efforts to extend known deposits. In the United States the principal ores are roscoelite and carnotite in sandstones, disseminated or in spots, bunches, lenses and seams.

Data relating to possible imports of vanadium ores or vanadium compounds or alloys are not shown separately in Canadian trade reports. In 1944 there were 257 tons of ferrovanadium valued at \$188,661 consumed in Canada in the manufacture of steel.

Vanadium ore was quoted September, 1945, 27½ cents per pound contained V₂O₅, f.o.b. shipping point, by "E. & M.J. Metal and Mineral Markets", New York.

Table 213.—Consumption of Ferrovanadium in Steel Furnaces in Canada, 1940-1945

Year	Short tons	Cost at works
		\$
1940.....	57	130,566
1941.....	182	438,639
1942.....	203	524,007
1943.....	204	558,717
1944.....	67	176,596
1945.....	57	188,661

ZIRCONIUM

The metal is not produced in Canada; zircon is the most common zirconium mineral and the Department of Mines and Resources, Ottawa, states that it, or curtolite, commonly occurs in greater or less amount in Canadian Precambrian pegmatites, also in the pegmatitic apatite-phlogopite deposits of the Granville areas in Ontario and Quebec.

Zircon is used to a steadily growing extent in refractories, specialized porcelains and heat-resisting glass.

Zircon is recovered from the beach sands near Melbourne, Florida, by the Riz Mineral Company, as an accessory of titanium ore and from the gravels near Lincoln, California, as a

by-product of gold dredging. Zirconium metal purifies, hardens, and strengthens steels and acts with aluminum to harden cupronickel. Metallic zirconium as powder or ductile metal is used in photoflash bulbs, radio tubes, ammunition primers and welding rods.

Zircon ore was quoted in September, 1945, by "E. & M.J. Metal and Mineral Markets", New York: per ton f.o.b. Atlantic seaboard, minimum 55 per cent ZrO_2 , \$65 to \$75 nominal. Zirconium alloy, 12 to 15 per cent Zr, 39 to 43 per cent Si, \$102.50 to \$107.50 per gross ton; 35 to 40 per cent Zr, 47 to 52 per cent Si, 14 to 16 cents per pound.

Table 214.—Consumption of Ferrozirconium(*) in Steel Furnaces in Canada, 1939-1945

Year	Short tons	Cost at works
		\$
1939.....	21	2,122
1940.....	1	93
1941.....	40	1,647
1942.....	51	7,337
1943.....	8	2,153
1944.....	15	1,613
1945.....	5	836

(*) Does not include other zirconium alloys (silvaz), etc.

CHAPTER SIX

THE NON-FERROUS SMELTING AND REFINING INDUSTRY IN CANADA

The Non-Ferrous Smelting and Refining Industry, as defined for statistical purposes, includes only those firms engaged primarily in the smelting of non-ferrous ores or concentrates and the refining of metals recovered therefrom.

The net value added by the industry in the processing of crude or semi-crude material during 1945 totalled \$89,898,878 compared with \$123,303,038 in 1944. Refined products included gold, silver, nickel, copper, lead, zinc, aluminum, tin, magnesium, antimony, bismuth, cobalt, cadmium, selenium, tellurium, and sulphur; other end products of individual plants or companies were copper-nickel matte, cobalt salts, cobalt oxide, nickel oxide, nickel salts, bauxite concentrates, arsenious oxide, sulphuric acid, platinum metals residues, zinc oxide, zinc dust, thallium residues and blister and anode copper. Statistics relating to the production of pitchblende products at Port Hope, Ontario, are not included in this report.

It should be noted, in a study of these data, that firms operating both mines and smelters may vary from year to year the nominal values of crude ores, etc., shipped from their mines to their own smelters, with the result that in some years the mining industry proper is favoured economically at the expense of the non-ferrous smelting and refining industry and vice versa. The total annual net value of commodity production for the Dominion as a whole is, however, not affected by these arbitrary internal evaluations.

Fuels and purchased electricity consumed by the industry in 1945 totalled \$26,837,162 compared with \$36,907,623 in 1944. The value of chemicals and other process supplies consumed during the year under review amounted to \$19,735,628 as against \$32,730,138 in the preceding year.

Employees during 1945 totalled 16,821 compared with 23,927 in 1944 and salaries and wages paid amounted to \$33,853,120 compared with \$44,536,991 in the preceding year. The wage earners in 1945 included 13,281 males and 741 females as against 19,550 and 1,006 respectively for last year.

With the cessation of hostilities there was a drastic reduction in the production of aluminum, nickel and other metals which were supplying war industries. Shortage of labor restricted the production of metals which continued to have a large peacetime demand.

Aluminum Company of Canada Ltd.—Production of aluminum is entirely by this company, which has its alumina plant at Arvida and reduction plants at Arvida, Ile Maligne, Shawinigan Falls, La Tuque and Beauharnois, all in the province of Quebec. These reduction plants have a total rated capacity of about 550,000 tons of aluminum a year or over 20 per cent of the estimated productive capacity of the world.

Fabricating plants are located at Kingston, Toronto and Etobicoke in Ontario, and at Shawinigan Falls in Quebec. These plants consume only a small part of the Company's production and Aluminum Company of Canada is primarily a producer and exporter of aluminum ingot.

Developments in 1945 consisted mainly in adjusting production to meet the lesser peacetime demand. The reduction plants at Shawinigan Falls, La Tuque and Beauharnois were closed and operations were concentrated at Arvida and Ile Maligne.

The principal imported raw materials used in the Canadian aluminum industry are bauxite from British Guiana, coal and coke from the United States, fluorspar from Newfoundland, and cryolite from Greenland and the United States.

No bauxite occurs in Canada, but clay, shale, nepheline syenite, and anorthosite, containing 20 to 30 per cent alumina, are found in many parts of the country. The utilization of these low grade raw materials has been the object of much research and various recovery processes have been developed. The economic success of any of these processes will depend largely upon local conditions, but it has yet to be proved that any of them can compete on an even basis with the Bayer process, the standard method for producing alumina.

Noranda Mines Ltd. (From the Company's annual report).—During 1945 the smelter treated 923,091 tons of ore, concentrate and slag, including 291,577 tons of custom ores and concentrates, and produced 106,292,352 pounds of anodes. After deducting the copper, gold and silver which was recovered from slags received from various shippers, the estimated production

of new metals was 102,323,546 pounds of fine copper, 226,095 ounces of gold and 1,149,970 ounces of silver. The estimated recovery from Horne Mine, ore and concentrate was 53,565,532 pounds of copper, 174,217 ounces of gold and 439,330 ounces of silver.

During the year under review the concentrator treated 858,523 tons of ore from the Horne Mine, from which 153,789 tons of copper-gold concentrate were produced and sent to the smelter. The cyanide mill treated 161,087 tons of pyrite from the flotation circuit tailing, from which 13,658 ounces of gold were recovered. 156,482 tons of pyrite were recovered from the cyanide mill tailing and sold to chemical plants.

Canadian Copper Refiners Ltd.—Copper production during the year totalled 96,000 tons. The new copper sulphate plant, which came into production in June, is operating satisfactorily and "Noranda" brand copper sulphate has been accepted as a quality product. The wartime requirements of selenium are being more than offset by new commercial developments.

International Nickel Co. of Canada Ltd. (From the address to shareholders by Robert C. Stanley).—Rapid changes in the Company's activities took place when fighting ended. It was necessary to adjust production, which had been increased from an average of 192,000,000 pounds of nickel per annum during the pre-war period, 1936 to 1939, to an average of 292,000,000 pounds of nickel per annum during 1941 to 1944. At the present time the production of an extra 100,000,000 pounds of nickel per annum, if not consumed, would quickly fill our warehouses and force a complete shutdown, such as actually occurred for a year's time at Copper Cliff after the first world war.

It is of interest to note that no major problem exists in scheduling the production of nickel because of excessive supplies of scrap nickel. Fortunately, the broad diversification of uses for nickel results in the absorption of scrap as produced. This condition is universal throughout the industry, even to the point where scrap containing as little as 1 per cent of nickel is readily utilized.

Our copper output from all sources, including copper in Monel metal matte, was 271,657,087 pounds in 1945 compared with 310,468,465 pounds in the previous year. Producers of the red metal are now considering actively its future use, and research and development of copper markets may be expected.

The sale of 381,741 ounces of the platinum metals is comparable with 303,394 ounces sold in 1944. Aside from important war uses, the increase in the sale of jewelry that occurred has led to an appreciation of the value and utility of the platinum metals in the manufacture of jewelry. Owing to the demand for platinum as a war material the metal palladium became much better known and has in many instances been accepted in its place.

The sales of gold from our ores were 58,179 ounces and silver 1,601,476 ounces, compared with 61,838 ounces and 1,784,633 ounces respectively in 1944. We mine, refine and sell two other metals—selenium and tellurium. Of the former we produced 168,000 pounds as compared with 65,000 pounds in 1944. The glass industry uses selenium as a decolorizing agent for glass-ware.

Falconbridge Nickel Mines Ltd. (From the Company's annual report).—During the first half of the year operations in the treatment plant were progressively handicapped by a lack of adequate tonnage. By the end of June the hoisted tonnage was insufficient for a two-furnace operation. Accordingly, the small blast furnace was shut down and smelting was continued on a one-furnace basis for the balance of the year. These changes affected metallurgical recovery to some degree.

The plant treated 716,868 tons of ore and produced 19,470 tons of matte containing 10,349 tons of nickel and 5,271 tons of copper. The treated ore had a metal recovery per ton of 28.87 pounds of nickel and 14.71 pounds of copper. Metallurgical losses per ton treated were 3.04 pounds of nickel and 2.66 pounds of copper.

Deloro Smelting and Refining Co. Ltd.—The cobalt refinery at Deloro, the only one in Canada, treated cobalt residues, a by-product from Northern Rhodesian copper mines, for the British Government during the war. These residues are much higher grade than the Canadian material and are comparatively simple to treat, and were the chief source of cobalt for the United Kingdom. No cobalt has been produced at Deloro from Canadian concentrates since the summer of 1940. Large stocks of Canadian ore, held mainly for the United States Government, remain untreated at Deloro. The company operates its silver furnaces only when the accumulation of silver-cobalt ores is enough to make the run worthwhile. Most of the refined white arsenic (As_2O_3) and arsenical insecticides made in Canada are produced by Deloro Smelting and Refining

Co. which obtains raw material from the O'Brien Mine in western Quebec and from the silver-cobalt arsenic mines of the Cobalt area.

Dominion Magnesium Ltd.—This firm was the only Canadian producer of magnesium. Its plant at Haley (near Renfrew), Ontario, ceased operations in August after accumulating a large stock of metal and alloys. Shortly after the end of the war in Europe the plant was purchased from the Canadian Government by the operating company, and extensive changes in equipment were under way at the close of the year.

Hudson Bay Mining and Smelting Co. Ltd. (Extracted from the annual report of the company).—Operations of the copper smelter continued to be satisfactory, and all available material was smelted. The tonnage of pay charge treated was somewhat less than in 1944 and amounted to 433,714 tons. Due to the fewer tons of paycharge available for treatment, the gold, silver and copper production was lower than last year. Copper production, however, was exceeded only in 1943 and 1944.

The cadmium plant treated precipitates from the zinc purification plant and produced a total of 135,632 pounds of metallic cadmium, having an average purity of 99.9809 per cent.

The tonnage of zinc concentrates treated during the year was exceeded only in 1943 and 1944. The average zinc assay per ton of concentrates treated was the same as in the preceding year, and the percentage of recovery of zinc from concentrates treated to slab zinc produced was only slightly lower. The tonnage and assay values of zinc concentrates treated during the year were as follows: Tons treated 146,210; assays: Au 0.055 oz.; Ag 1.46 oz.; Cu 0.54 per cent; Zn 45.8 per cent, from which 94,936,880 pounds of slab zinc were produced.

Consolidated Mining and Smelting Co. of Canada Ltd. (From the company's annual report).—During 1945 the supply of labour continued to decrease and reached a low point in the autumn. In spite of this situation, and in consequence of development work carried out in 1944, the rate of operation at the Sullivan Mine was increased. This resulted in increased output of our main products which, together with some improvement in efficiency, reduced costs at Kimberley and Trail.

The Sullivan Mill performance in 1945 deserves special mention because of the remarkable increase in capacity per operating day to 8,457 tons in 1945 from 7,165 in 1944 and 7,496 in 1942, the previous high year. This was accomplished with but little new equipment and metallurgical results were well maintained.

The tonnage of refined lead was increased to 163,142 in 1945 from 143,556 in 1944, and bar zinc output was 134,873 tons compared to 117,365 in 1944. Silver production remained practically unchanged. Efficiencies of our metallurgical operations were generally maintained.

Ready markets continue to exist for our other metals, such as tin, cadmium, bismuth and mercury. No mercury was produced during 1945 and sales were made from stocks accumulated in former years. Mercury prices continued the downward trend which commenced late in 1943, but a firmer tone was evident towards the end of the year.

Table 215.—Principal Statistics of the Non-Ferrous Metallurgical Industry in Canada, 1943-1945

	1943 (b)	1944 (b)	1945
Number of companies.....	9	9	9
Number of plants.....	16	16	17
Capital employed..... \$	392,217,159	(c) 3,371	(c) 2,749
Number of salaried employees.....	3,375	7,816,181	6,812,501
Salaries..... \$	7,160,290	20,556	14,022
Number of wage-earners.....	23,374	36,720,810	27,040,619
Wages..... \$	41,331,442	474,206,801	355,676,526
Value of plant products (gross) (a).....	511,213,376	281,266,002	219,204,858
Estimated cost of ores, concentrates, etc., treated.....	317,917,186	43,105,101	26,837,162
Cost of fuel and purchased electricity.....	43,105,101	32,730,138	19,735,628
Process supplies (other than ores, fuel, etc.).....	38,334,069	111,857,020	89,898,878
Value added by smelting (net) (d).....	111,857,020	123,303,038	

(a) The gross value of production should not be interpreted as the ultimate sale value of finished metal only, as it represents the combined values of all industry (smelting, refining, etc.) end products (blister, copper matte, etc.) and in this sense represents a duplication in values.

(b) Data in this report do not include those relating to Eldorado Mining and Refining Ltd. which mines and refines pitchblende products.

(c) Data not collected in 1944-1945.

(d) See preceding text.

DOMINION BUREAU OF STATISTICS

Table 216.—Number of Wage-Earners, by Months, 1942-1945

Month	1942		1943		1944		1945	
	Male	Female	Male	Female	Male	Female	Male	Female
January.....	15,778	31	22,322	522	22,193	954	15,070	954
February.....	16,298	32	23,120	560	21,737	943	14,796	947
March.....	16,434	34	23,089	653	21,013	919	14,955	931
April.....	16,617	39	22,788	727	20,488	922	14,853	922
May.....	17,223	53	22,552	773	19,574	988	14,423	882
June.....	18,297	68	22,968	843	19,452	1,023	13,994	857
July.....	18,900	75	22,785	886	19,389	1,089	13,448	823
August.....	19,346	81	22,538	917	18,928	1,093	12,819	762
September.....	19,091	206	22,186	943	18,088	1,069	11,983	626
October.....	20,076	424	21,856	938	18,175	1,052	10,854	473
November.....	20,953	570	22,337	904	18,319	1,024	10,682	137
December.....	21,239	605	22,393	903	18,794	989		
Average.....	18,352	185	22,577	797	19,550	1,006	13,281	741

Table 217.—Non-Ferrous Smelters and Refineries in Canada

ALUMINUM REDUCTION WORKS

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
Quebec				
Aluminum Company of Canada, Ltd.	Arvida.....	Smelting plant: The concentrated ore is reduced to metallic aluminum by the Hall-Héroult method. Hall-type electric furnaces with carbon linings and Soderberg pots are used for smelting, and brick-lined furnaces are used for blending and alloying.	Tons	Aluminum ingots (including alloys)
			70,000 (27,000/M)	
		Ore plant: Bauxite (aluminum hydrate with impurities) from mines in British Guiana is concentrated by the Bayer process. Operations include digestion with caustic soda; filtration; precipitation and roasting.	1,050,000	
		Carbon plant: Special petroleum or pitch coke is crushed, ground, calcined, mixed with coal-tar pitch; then formed into blocks and baked in electric furnaces.		
Aluminum Company of Canada, Ltd.	Shawinigan Falls.	Cryolite plant: Cryolite from mines in Greenland is crushed, ground and then purified by mechanical and magnetic treatment.		Aluminum ingots (including alloys)
		Smelting plant.....	65,000	
		(See Smelting plant above)		
		Smelting plant.....	34,000	
		La Tuque.....	34,000	
" " "	Isle Maligne.....	"	20,000	
		"		

ANTIMONIAL-LEAD REFINERY

Company	Location	Process and Equipment	Rated Annual Capacity	Product
Consolidated Mining and Smelting Co. of Canada, Ltd.	Tadanac (Trail) ..	New plant replacing antimony refinery, started March, 1945 Equipment: Reduction and refining furnaces for treating antimonial flue dusts and refined lead drosses. Equipment with capacity equivalent to 600 tons of antimony per year.	Tons 600	Antimonial lead (25% antimony) (Intermittent operation)

Table 217.—Non-Ferrous Smelters and Refineries in Canada—Continued

BISMUTH REFINERY

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
			Tons	
Consolidated Mining and Smelting Co. of Canada, Ltd.	Tadanac (Trail)..	Reverberatory furnace for the reduction of lead-bismuth-copper slags; Six crystallizing kettles for Pattinsonization of lead-bismuth alloys and for complete elimination of silver by Parksing; Anode casting for lead-bismuth alloy; Parks process for elimination of silver; electrolytic cells (16); capacity 8 tons of lead per day; Melting furnace for bismuth slimes; graphite crucibles for removing lead before last kettles. Two 5-ton kettles for refining bismuth metal for market.	180	Metallic bismuth (Intermittent operation)

CADMIUM REFINERY

Manitoba			Tons	
Hudson Bay Mining and Smelting Co., Limited	Flin Flon.....	Pan grinder, mechanical agitators, shriver presses, sponge precipitation agitators, 10 electrolytic cells, 2 electric melting pots; treating cadmium residue from zinc refinery.	180	Metallic cadmium
British Columbia				
Consolidated Mining and Smelting Co. of Canada, Ltd.	Tadanac (Trail)..	Mechanical mixers; Pachuca tanks; Kelly filters; precipitating tanks; two electrolytic units; three small pot furnaces; melting plant; treating cadmium residues from the zinc refinery.	700	Metallic cadmium

CALCIUM REDUCTION WORKS

Ontario			Tons	
Dominion Magnesium Co., Ltd.	Haley (near Renfrew)	Reduction under high vacuum in electric furnaces.	.....	Metallic calcium

COPPER SMELTERS

Quebec			Tons	
Noranda Mines, Ltd.....	Noranda.....	Twenty-six (26) storage bins (18 used for sulphides, each with a capacity of 400 tons and 8 used for siliceous ore, each with a capacity of 140 tons); ten (10) Wedge-type roasters, 8 with inside diameter 25' with seven internal hearths, each roaster with a capacity of 325 tons per day, and two roasters 25' inside diameter with 9 internal hearths and a capacity of 400 tons per day, reducing the sulphur in feed from 28% to 14%; Two 2100-ton reverberatory furnaces, 33' x 111½' inside dimensions, side feeding, and burning pulverized coal; Five Pierce-Smith converters, two 12' x 30', two 13' x 30', one 13' x 28'.	73,000	Anode copper

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Table 217.—Non-Ferrous Smelters and Refineries in Canada—Continued

COPPER SMELTERS—Concluded

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
Quebec—Concluded				
Noranda Mines, Ltd.—Con.	Noranda.....	Two Cottrell precipitators, one of six units in parallel for roaster gases, and one of four units in parallel for converter gases and anode furnace gases; two stacks 422½' high, measuring 31' outside and 23' inside diameter at the base, and 20' outside and 18' inside diameter at the top; Anode furnace, dimensions 14' x 28' 3" at hearth, capacity 250 tons per day and burning pulverized coal; Walker casting wheel (22 moulds) for making 700 lb. anodes.	Tons	
Ontario				
International Nickel Co. of Canada, Ltd.	Copper Cliff.....	(See Nickel-copper).....		Blister copper
Manitoba				
Hudson Bay Mining and Smelting Co., Limited	Flin Flon.....	Four bedding bins, each with a capacity of 2,500 tons; four Herreshoff 10-hearth roasting furnaces, 21' 6" in diameter, each with a roasting capacity of 375 tons of feed in 24 hours; One 1,500-ton reverberatory furnace, size: smelting zone 29' 8" wide, settling zone 22' 6" wide, length 101' 6", and fired by pulverized coal; Three 13' x 30' Pierce-Smith basic lined converters, served by two 30-ton electric cranes; Two Cottrell precipitators; Walker casting wheel, 34' diameter; One 13' x 20' tilting blister copper holding vessel fired by pulverized coal; One coal pulverizing plant with a capacity of 65 tons in 8 hours.	60,000	Blister copper

COPPER REFINERIES

Quebec				
Canadian Copper Refiners, Ltd. (a)	Montreal East....	Receiving department: Two 7½-ton cranes; two cathode shears; two track scales. Charging aisle: Two 7½-ton overhead cranes; one Morgan charging machine, capacity 4 tons; one track scale. Furnace aisle: One 150-ton reverberatory anode furnace, oil-fired, hearth 26' 9" x 12' 8". One 300-ton reverberatory wire bar furnace, oil-fired, hearth 43' 2" x 14' 9".	Tons 112,000	Refined copper

(a) Canadian Copper Refiners, Ltd. Controlled by Noranda Mines, Ltd. Refining anode copper of the Noranda and blister copper of the Flin Flon smelters.

Table 217.—Non-Ferrous Smelters and Refineries in Canada—Continued

COPPER REFINERIES—Continued

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
Tons				
Quebec—Concluded				
Canadian Copper Refiners, Ltd. —Concluded	Montreal East....	<p>Casting aisle: One 33' Walker wheel casting machine for making anodes, holding 22 anode moulds, capacity 48 tons of anodes per hour (commercial anodes 36" x 36" x 1½", weight 700 lb.; stripper anodes, 38" x 38" x 1½", weight 770 lb.); water cooling bosh, capacity of 44 anodes; One Walker wheel for casting wire bars and ingots, capacity 84 tons per hour; water cooling bosh and pan conveyer; one 10-ton crane.</p> <p>Copper storage and shipping aisle: Two 5-ton cranes; two track scales.</p> <p>Electrolytic tank house: 612 lead-lined concrete commercial cells arranged in 34 sections of 18 each (cell 16' 7" long, 3' 7½" wide, and 4' 1½" deep, inside dimensions); 54 lead-lined concrete stripper cells arranged in 3 sections of 18 each (cell 17' 5" long, 3' 9½" wide, and 4' 2½" deep, inside dimensions); 8 sump tanks, 3 slime pits, two movable and one stationary washing machines for removing electrolyte from cathodes; two 7½-ton overhead cranes; 13 purification cells for liberating copper from discarded electrolyte and from slimes leach liquors.</p>		
Ontario				
International Nickel Co. of Canada, Ltd. (Copper Refining Division)	Copper Cliff.....	<p>Pig storage building: Two 10-ton overhead cranes.</p> <p>Anode charging aisle: Two 4-ton suspended charging cranes; two 10-ton service cranes.</p> <p>Anode furnace aisle: Three pulverized coal-fired reverberatory anode furnaces—each with a capacity of 300 tons.</p> <p>Anode casting aisle: Five 36' Walker wheels, each having 22 anode moulds and a capacity of 50 tons of anodes per hour. (Anodes 36" x 36" x 1½"—weight 560 lb.) Cooling boshes—capacity 60 tons each; two 10-ton service cranes.</p> <p>Anode storage building: Two 10-ton cranes; one cathode shear gap, 4' 6" x 18"—capacity ½" to ⅝" copper cathodes.</p> <p>Electrolytic tank house: 1,350 lead-lined tanks (regular and stripper) arranged in 36 sections mostly of 38 tanks each (each tank 11' 3" long, 3' 6" wide, and 3' 9½" deep, inside dimensions). Pyne-Green segregating cells used to concentrate the nickel sulphate solutions.</p> <p>Cathode storage aisle:</p> <p>Wire bar charging aisle: Two 4-ton suspended charging cranes; one 10-ton and one 15-ton service crane.</p>	168,000	Refined copper

Table 217.—Non-Ferrous Smelters and Refineries in Canada—Continued

COPPER REFINERIES—Concluded

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
Ontario—Concluded			Tons	
International Nickel Co. of Canada, Ltd. (Copper Refining Division)— <i>Concluded</i>	Copper Cliff.....	<p>Wire bar furnace aisle: Two pulverized coal-fired reverberatory furnaces, each of 300-ton capacity; two 30-ton, three-phase, direct arc furnace.</p> <p>Wire bar casting aisle: Three 40' Clarke casting wheels; four cooling boshes and conveyers; one 35' vertically cast shapes wheel.</p> <p>Wire bar storage inspection and shipping building: Two 10-ton overhead cranes.</p> <p>Acid plant: Two sections of liberator cells and auxiliary storage tanks; three vacuum evaporators; two 40" centrifuges; spray pond and cooling tanks for crude nickel sulphate residues.</p> <p>Nickel salts plant: Two dissolving tanks; one precipitation tank; one wooden filter press; one open type evaporator; a 26" centrifuge and eight crystallizing tanks.</p>	.....	Nickel sulphate

LEAD SMELTER

<p>British Columbia</p> <p>Consolidated Mining and Smelting Co. of Canada, Ltd.</p>	<p>Tadanac (Trail).</p>	<p>Ore roasters: Six standard Dwight-Lloyd machines each 264" x 42"; eight double-size Dwight-Lloyd machines each 600" x 42"; bed thickness 6½" on primaries and 11" on secondaries.</p> <p>Furnaces: Blast furnaces: one 48" x 180" (brick top, water cooled); two 60" x 180" and one 60" x 270" (all water cooled); one 70" x 270" (brick top, water cooled); all using vaporizers. Cottrell flue collectors (output 10 to 15 tons per day). Furnace capacity about 725 tons of lead bullion per day. Two coal-fired reverberatory drossing furnaces, 100-ton capacity; lead laundered into three 60-ton and two 100-ton kettles; one anode casting machine for lead; one re-treatment furnace for dross.</p> <p>Slag treatment plant: One slag fuming furnace, 10' x 24' in section; coal dust fired. (Slag introduced in 50- to 60-ton batches and discharge is granulated.) One 1,750 h.p. B. & W. boiler (income gas 2000° F. and discharge 850° F.); Green economizer; Dracoo bag filter (eight 10-compartment units, total of 1,440 bags); conveyer and oxide storage bin.</p>	<p>Tons</p> <p>255,000 (700 per day)</p>	<p>Lead bullion and copper-lead matte</p>
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Table 217.—Non-Ferrous Smelters and Refineries in Canada—Continued

LEAD REFINERY

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
British Columbia			Tons	
Consolidated Mining and Smelting Co. of Canada, Ltd.	Tadanac (Trail)	Betts electrolytic process; 1,198 cells arranged in 13 cascades and made of concrete coated with asphalt and using hard rubber-lined pipe; current density 21 to 23 amperes per sq. ft. and voltage drop between cells 0.3-0.6 volts; cathodes are thin lead sheets; electrolyte: solution of hydro-fluosilicic acid and lead fluosilicate; four 235-ton pots and three 60-ton kettles for cathode melting, and two 235-ton kettles for remelting anode scrap; two casting wheels for pig lead; maximum capacity per 24 hours is 650 tons.	255,000 (700 per day)	Refined lead

MAG. RED. WKS.

Ontario				
Dominion Magnesium Co., Ltd.	Haley (near Renfrew)	<p>Ferrosilicon (Pidgeon) Process: Crushing; calcining of dolomite; mixing and briquetting of calcined dolomite and ferrosilicon. Reduction plant consisting of ten (10) electrically heated retort furnaces. Melting and alloying plant for production of pure magnesium and magnesium alloy ingots from the magnesium condensate.</p>	15 tons per day	Refined magnesium, and magnesium alloy ingots

NICKEL-COPPER SMELTERS

Ontario	Tons	
International Nickel Company of Canada, Ltd.	Copper Cliff.....	<p>Roasters:</p> <p>Forty-two Herreshoff roasting furnaces (dimensions: outside diameter 21½'; height 31'; ten interior hearths and a drying hearth). These roasters are superimposed over seven reverberatory furnaces; capacity 4,000,000 tons (ore and concentrate) a year.</p> <p>Cottrel plant:</p> <p>(a) Roasters—Eleven units of three sections, treating gases from roasters.</p> <p>(b) Converters—Seven units of three sections each treating gases from nickel converters.</p> <p>Reverberatory furnaces:</p> <p>(a) Nickel—Seven reverberatory furnaces; five are 27' 6" x 110', one is 29' x 110'; and one is 24' x 110', inside dimensions. Total rated capacity per day, 11,000 tons of dry solid charge.</p> <p>(b) Copper—Two reverberatory furnaces, 24' x 110', inside dimensions. Total rated capacity per day 1,700 tons of dry solid charge.</p> <p>Converters:</p> <p>(a) Nickel—Fifteen Pierce-Smith converters treating nickel-copper matte, dimensions 13' x 35'.</p> <p>(b) Copper—Five Pierce-Smith converters, blowing copper matte to blister copper.</p> <p>Blast furnaces:</p> <p>Two blast furnaces retained for smelting ore and reverts; total rated capacity, 1,800 tons per day.</p>
		<p>235,000 Copper-nickel Bessemer matte</p> <p>..... Blister copper</p>

Table 217.—Non-Ferrous Smelters and Refineries in Canada—Continued

NICKEL-COPPER SMELTERS—Concluded

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
Ontario—Concluded			Tons	
International Nickel Company of Canada, Ltd. (Nickel Refining Division)— <i>Con.</i>	Port Colborne....	Electrolytic department: Twelve units, each served by two 3-ton bridge cranes and one 3-ton work floor crane; units Nos. 1, 2 and 3 have 112 tanks each, units 4 to 12 have 156 tanks each, and there are 40 additional tanks in annex; stainless steel sheets are used as starting blanks in all units.	106,000	Anode slimes: refined nickel (precious metals)

PRECIOUS METALS REFINERIES

Quebec			Tons	
Canadian Copper Refiners, Ltd.	Montreal East....	<p>Slimes wet room: Surge tank for holding tank house anode slimes; Dorcco pump; Dorr thickener; Oliver filter; Nichols-Herreshoff drying furnace, capacity 5 tons dried slimes per day; tanks for water leaching acid-roasted slimes; Dorcco pump; Oliver filter; tank for caustic leaching treated slimes; four filter presses; solution storage tanks.</p> <p>Roaster room: Chain roasters for roasting dry slimes, capacity 7 tons roasted slimes per day; six digesters for mixing dried slimes with acid; scrubber and Cottrell system for recovering selenium and acid from chain roaster gases.</p> <p>Doré furnace room: One reverberatory oil-fired Doré furnace (hearth area 34½ sq. ft.), charge 12,000 lb. caustic-leached slimes, producing Doré metal. (Au 10%, Ag 89.5%, Cu 0.5%) and slags (scoria slag and nitre slag to anode furnace, No. 2 soda slag water-leached and filtered, solution for selenium recovery and residue to anode furnace); scrubber and Cottrell system for recovering flue dust from Doré furnace gases; slag crushing and sampling mill; slag leaching tank.</p> <p>Parting plant: Fifteen rubber- and brick-lined steel Moebius cells, operating at 25 amps. per sq. ft. cathode area; carts for washing silver crystals; silver sand storage bin; silver melting retort; moulds for casting silver bars (1,000 Troy ounces each and 999 + fine); Gold boiling kettle; gold sand filter; Monarch tilting crucible furnace; moulds for casting gold bars (700 Troy ounces each and 998 + fine). Crucible furnace for melting scrap Doré anodes; dissolving tank for electrolyte makeup; wash water storage and cementation for recovering silver from discard parting plant electrolytes. Moebius cell, capacity 450,000 ounces silver per month.</p>	<p>Fine ounces Au:600,000 Ag: 5,400,000</p>	Fine gold, fine silver

Table 217.—Non-Ferrous Smelters and Refineries in Canada—Continued

PRECIOUS METALS REFINERIES—Concluded

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
Ontario				
International Nickel Co. of Canada, Ltd. (Copper Refining Division)	Copper Cliff.....	Slimes room: Electrolytic slime from copper refinery treated; two 40-inch lead-lined centrifuges for separating and drying slimes. Furnace room: Roasting furnace for treatment of raw slimes to remove copper; Doré furnace for treatment of leached slimes to produce Doré metal. Parting plant: Forty (40) Balbach Thum mastio lined concrete tanks and one oil-fired furnace for melting silver crystals. Gold, platinum and palladium room: Treating parting plant slimes: one stoneware dissolving kettle; two gold precipitating kettles; and two cementation tanks—cementing out platinum and palladium. Precipitated gold cast into anodes and refined electrolytically in Wohlwill cells.	Tons Au:100,000 Ag: 2,800,000	Fine gold, fine silver (impure platinum and palladium)
Manitoba				
Hudson Bay Mining and Smelting Co., Limited	Flin Flon.....	Cyanidation; precipitate treated in smelter.	.....	Gold-silver precipitate (feed: 1,642,500 tons)
British Columbia				
Consolidated Mining and Smelting Company of Canada, Ltd.	Trail.....	Drying chambers for lead slimes; two melting furnaces: one slag re-treatment furnace; two oxidizing furnaces; two Doré furnaces; first slag (lead-antimony) returned to blast furnaces; second slag (lead, copper and bismuth oxides and silver) to bismuth plant; flue dust to antimonial lead plant. Parting plant: Balbach Thum electrolytic plant (92 cells) for treatment of Doré metal for recovery of gold and silver (capacity 40,000 oz. per day); Bailey furnace (electric) for melting silver crystals; gold to gold kettle and filter; Globar furnace for melting gold.	Au:350,000 Ag: 12,000,000	Fine gold and fine silver

RADIUM REFINERY

Ontario				
Eldorado Mining and Refining (1944), Ltd.	Port Hope.....	Oxidizing, roasting of pitchblende-silver ore, salt-roasting of ore, followed by acid leaching; treatment of uranium solution with soda ash, acid, and sodium hydroxide for recovery of sodium uranate. Recovery of silver from residues by hyposulphite leaching and treatment with sodium sulphide; treatment of residues with soda ash, followed by acid leaching, to put radium into solution; conversion of radium to bromide and recovery by fractional crystallization.	Tons 2,400 tons of ore a month.	Uranium oxide (black), uranium nitrate, sodium uranate, radium bromide, silver sulphide, radio-active lead

Table 217.—Non-Ferrous Smelters and Refineries in Canada—Continued

SILVER REFINERIES

(See "Precious Metals Refineries")

SILVER-COBALT-NICKEL-ARSENIC SMELTER AND REFINING WORKS

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
Ontario				
Deloro Smelting & Refining Company, Ltd.	Deloro.....	Blast furnace: (Products: silver bottoms, crude arsenic and speiss.)	5,000 tons of ore or concentrate	.....
		Silver: Refining furnace and melting furnace. (Product: fine silver.)	Ag: 6,000,000 ozs.	Silver bullion
		Arsenic: Bag house, refining furnace, blast furnace re-treatment. (Products: refined arsenic, bismuth-lead bullion.)	As ₂ O ₃ : 2,000 tons	White arsenic
		Speiss: Ball mill, Edwards roasters, Brückner chloridizer ball mill, leaching tanks, cyanidation-precipitation tank, filter presses, silver melting furnace. (Products: fine silver and speiss residue.)	.....	.....
		Speiss residue: To cobalt oxide plant.	.....	.....
		Cobalt oxide and metal plant: Steam plant—high and low pressure air compressors. Sulphating equipment—dissolving tanks, Oliver filter, precipitation tanks, filter presses, calcining furnaces, reduction furnaces; pulverizing and packing equipment.	.....	Cobalt oxide and cobalt metal
		Stellite plant: Electric melting furnaces, mould and casting shop, testing equipment, grinding and finishing equipment.	.....	Stellite cutting tools and hard facing rods

SELENIUM REFINERY

Quebec				
Canadian Copper Refiners, Ltd.	Montreal East....	Eliminated in sulphatizing roast of silver slimes in muffle-fired roasting furnaces and collected in solution in lead gas scrubber. Precipitated out of scrubber solution in 6 precipitators, settled, washed, dried, retorted, ground, screened, and packed.	Pounds 450,000	Refined selenium
Ontario				
International Nickel Co. of Canada, Ltd. (Copper Refining Division)	Copper Cliff.....	Three receiving tanks; three neutralizer tanks; one wooden filter press; one vacuum evaporator; three precipitating tanks; one 150-lb. capacity rod mill; two Rotex screens; and one micro pulverizer.	.....	Refined selenium

Table 217,—Non-Ferrous Smelters and Refineries in Canada—Concluded

TELLURIUM REFINERY

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
Quebec			Pounds	
Canadian Copper Refiners, Ltd.	Montreal East....	Obtained from caustic leach liquors from silver slimes and Doré furnace slags, neutralized, mixed with sulphuric acid, roasted, water leached, acid leached, precipitated with SO ₂ , washed, dried, and melted in furnace and poured into moulds as finished product.	50,000	Metallic tellurium
Ontario				
International Nickel Co. of Canada, Ltd. (Copper Refining Division)	Copper Cliff.....	Two dissolving tanks; one leaf filter; two vacuum bottles; two precipitation tanks; one tilting oil-fired furnace; one micro pulverizer; one Rotex screen.	.....	Metallic tellurium

TIN SMELTER

British Columbia			Tons	
Consolidated Mining and Smelting Co. of Canada, Ltd.	Kimberley.....	Tin recovered from iron flotation tailings, blanketed, tabled, and smelted in electric furnace.	700	Metallic tin

ZINC ELECTROLYTIC REFINERIES

Manitoba			Tons	
Hudson Bay Mining and Smelting Co., Limited	Flin Flon.....	Roasters: Eight 7-hearth Wedge roasters, 25' in diameter. Leaching and filtering: Pachuca tanks, Dorr classifiers, thickeners, Moore filters. Electrolytic precipitation: 840 electrolytic tanks, each holding 18 aluminium sheets. Two reverberatory furnaces (capacity 150 tons of zinc per day) for melting cathode zinc.	50,000	Bar zinc
British Columbia				
Consolidated Mining and Smelting Company of Canada, Ltd.	Tadanac (Trail) . .	Roasters: Twenty-five (25) 7-hearth Wedge roasters (eight modified for flash roasting). Leaching and filtering: Pachuca tanks, classifiers; ball mill, Dorr thickeners, purifying mixers, thickeners and Kelly filters and Sheiver filters. Electrolytic precipitation: Electrolytic tanks; five reverberatory furnaces for melting cathode zinc. Re-treatment plant: Pug mills (mixers); cell room (acid); eight Pachuca tanks (4 acid and 4 neutral); six thickeners (3 acid and 3 neutral); eight purification mixers; nine Kelly filters and four American filters. Capacity of plant: 365,000 tons of concentrate per year.	165,000 (465 per day)	Bar zinc

CHAPTER SEVEN

THE MINERAL FUELS INDUSTRIES IN CANADA

The Coal Mining Industry.

The Coke and Gas Industry.

The Natural Gas Industry.

The Peat Industry is included under non-metals, chapter 8.

The Petroleum Industry:

1. Production of Crude Petroleum;
2. Production of Petroleum Products.

NOTE:—In order to correlate data regarding fuels in Canada, this chapter has been prepared to include statistics of the coal, natural gas, and petroleum industries. This survey presents information regarding these industries as a whole, dealing principally with the mineral industry, although supplementary data are shown for closely allied manufacturing operations.

The Bureau issues an annual report on Coal Statistics for Canada which may be referred to for complete details of the Coal Mining Industry.

THE COAL MINING INDUSTRY

Coal production in Canada during 1945 totalled 16,506,713 tons, a decrease of 3 per cent from the 1944 output of 17,026,499 tons. Compared with 1944, production dropped 11 per cent in Nova Scotia and 20 per cent in British Columbia, but increased 5 per cent in New Brunswick, 12 per cent in Saskatchewan and 5 per cent in Alberta.

Production at underground mines in 1945 was affected by the labour shortage and by summer holidays, which are now standard throughout the industry, and also by a three-week strike in Western Canada, but these conditions were offset in Saskatchewan and Alberta through increased production from stripping operations, and Alberta's production of 7,800,151 tons was the highest recorded in the history of the province.

Imports of coal amounting to 24,588,702 tons in 1945 showed a decrease of 15 per cent from the quantity of 28,926,925 tons imported in 1944. Exports amounted to 840,708 tons compared with 1,010,240 tons in 1944.

Coal made available for consumption in 1945 amounted to 40,254,707 tons, a decrease of 10 per cent from the quantity made available in the previous year. These figures do not represent the quantity consumed during the year, but are the actual tonnages of new coal made available for use and are calculated by adding production and imports and subtracting exports.

During 1945, Canadian coal mines employed 23,601 wage-earners and 1,700 salaried employees, compared with 23,885 wage-earners and 1,711 salaried employees in 1944. Salaries and wages paid in 1945 totalled \$49,431,965 compared with \$52,071,826 in the previous year.

Change in Classification of Canadian Coal

A change from previous years has been made in this report in the classification of Canadian coals, as the Dominion Bureau of Statistics is now using the classification adopted by the American Society for Testing Materials (A.S.T.M.). The new classification is the result of the joint work of the United States and Canadian chemists, fuel technologists, geologists and others, and is an attempt to provide a uniform system of classification for coals on this continent.

Report(*) No. 814, dated June, 1939, of the National Research Council of Canada, explains the specifications of the A.S.T.M. classification and its application to Canadian coals, and recommends the adoption of this classification for general use by the Dominion Government and the industry.

* Report on the A.S.T.M. Standard Specifications for Classification of Coals by Rank and by Grade and their Application to Canadian Coals, prepared for the Associate Committee on Coal Classification and Analysis of the National Research Council of Canada.

The application of the A.S.T.M. classification for statistical purposes involves a change only in the coals of the province of Alberta; coals of the other provinces remain classified as before.

The effect of the A.S.T.M. classification when applied to Alberta coals is a general promotion in rank of the low rank coals, in which coals formerly classified as sub-bituminous are raised to the rank of bituminous, and coals formerly classified as lignite are raised to the rank of sub-bituminous, with exception that coals from three former lignite districts—Halcourt, Lethbridge and Magrath—now become bituminous. Coals formerly classified as bituminous remain as such.

The new classification does not create any partition of individual districts, the districts being only re-grouped into the two divisions, bituminous and sub-bituminous, instead of bituminous, sub-bituminous and lignite as previously.

Table 218.—Employees, Salaries and Wages in the Coal Mines, by Provinces, 1945

Province	Average number of employees				Salaries and wages			
	Salaried employees		Daily wage-earners		Total	Salaries	Wages	Total
			Surface	Under-ground				
	Male	Female				\$	\$	\$
Nova Scotia.....	488	137	1,894	10,503	13,022	1,503,853	23,725,235	25,229,088
New Brunswick.....	43	14	269	508	834	134,066	1,250,684	1,384,750
Manitoba.....								
Saskatchewan.....	42	8	272	243	565	94,036	821,455	915,491
Alberta.....	655	49	2,084	5,488	8,276	1,673,402	15,308,415	16,981,817
British Columbia.....	230	34	573	1,767	2,604	701,192	4,219,627	4,920,819
Canada.....	1,458	242	5,092	18,509	25,301	4,106,549	45,325,416	49,431,965

Table 219.—Employment and Days' Work Done, by Months, at Coal Mines in Canada, 1945, with Comparative Totals for 1944

Month	Number of employees			Man-days worked		
	Surface	Under-ground	Total	Surface	Under-ground	Total
January.....	6,174	20,246	26,420	147,636	446,369	594,005
February.....	6,023	20,074	26,097	134,668	405,929	540,597
March.....	5,863	19,605	25,468	139,134	423,262	562,396
April.....	5,599	18,991	24,590	129,158	390,950	520,108
May.....	5,639	18,673	24,312	125,855	368,819	494,674
June.....	5,653	18,291	23,944	135,522	388,858	524,380
July.....	5,732	18,090	23,822	123,497	345,726	469,223
August.....	5,768	18,031	23,799	128,825	340,683	469,508
September.....	5,739	18,210	23,949	122,327	342,981	465,308
October.....	6,056	18,425	24,481	126,141	326,382	452,523
November.....	6,275	19,694	25,969	151,168	427,457	578,625
December.....	6,291	19,960	26,251	134,521	364,157	498,678
Total 1945.....				1,598,452	4,571,573	6,170,025
Total 1944.....				1,696,497	4,927,528	6,624,025

Table 220.—Output of Coal in Canada, by Grades, 1930-1945

Calendar Year	Bituminous		Sub-bituminous		Lignite		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
		\$		\$		\$		\$
1930.....	11,974,851	45,597,990	2,327,049	6,302,895	579,424	968,863	14,881,324	52,849,748
1931.....	9,692,732	35,581,558	1,886,337	4,677,068	664,142	949,056	12,243,211	41,207,682
1932.....	8,666,277	30,636,270	2,183,945	5,248,292	888,691	1,233,133	11,738,913	37,117,695
1933.....	8,875,309	30,072,157	2,096,506	4,556,595	931,529	1,295,210	11,903,344	35,923,962
1934.....	10,914,405	36,568,356	1,982,387	4,227,504	913,401	1,250,082	13,810,193	42,045,942
1935.....	10,671,305	35,609,964	2,291,810	5,052,070	924,891	1,301,076	13,888,006	41,963,110
1936.....	11,717,648	38,736,380	2,486,713	5,582,349	1,024,821	1,473,205	15,229,182	45,791,934
1937.....	12,496,642	42,049,957	2,286,792	5,200,045	1,052,520	1,502,046	15,835,954	48,752,048
1938.....	11,164,742	37,714,195	2,105,794	4,881,900	1,024,182	1,386,076	14,294,718	43,982,171
1939.....	12,614,236	42,442,382	2,117,324	4,975,636	961,138	1,258,972	15,692,698	48,676,990
1940.....	14,262,922	47,921,227	2,204,748	5,340,040	1,099,214	1,412,577	17,566,884	54,673,844
1941.....	14,531,862	50,088,519	2,370,050	6,254,222	1,324,009	1,716,889	18,225,921	58,059,630
1942.....	14,822,230	53,423,090	2,740,419	7,710,663	1,302,381	1,763,828	18,865,030	62,897,581
1943.....	13,358,664	51,798,996	2,893,422	8,643,340	1,666,971	2,435,213	17,859,057	62,877,549
1944.....	12,988,328	59,303,397	2,665,405	9,094,858	1,372,766	2,034,914	17,026,499	70,433,169
1945.....	11,774,164	54,689,261	3,199,554	10,572,059	1,532,995	2,327,082	16,506,713	67,588,402

Figures shown in above table have been adjusted to agree with A.S.T.M. classification.

Table 221.—Output and Value of Coal in Canada, by Kinds and Provinces, 1944 and 1945

(Short tons)

Province	1944			1945		
	Number of mines	Quantity	Value	Number of mines	Quantity	Value
		tons	\$		tons	\$
NOVA SCOTIA (Bituminous).....	37	5,745,671	30,728,535	38	5,112,615	28,350,278
NEW BRUNSWICK (Bituminous).....	32	345,123	1,845,277	29	361,184	2,021,806
MANITOBA (Lignite).....						
SASKATCHEWAN (Bituminous).....	91	1,372,766	2,034,914	79	1,532,995	2,327,082
ALBERTA—						
Bituminous.....	39	4,763,303	17,720,079	37	4,600,597	17,170,318
Sub-bituminous.....	164	2,665,405	9,094,858	162	3,199,554	10,572,059
Total.....	203	7,428,708	26,814,937	199	7,800,151	27,751,377
BRITISH COLUMBIA (Bituminous).....	31	2,134,231	9,009,506	28	1,699,768	7,137,859
YUKON (Bituminous).....						
CANADA—						
Bituminous.....	139	12,988,328	59,303,397	132	11,774,164	54,689,261
Sub-bituminous.....	164	2,665,405	9,094,858	162	3,199,554	10,572,059
Lignite.....	91	1,372,766	2,034,914	79	1,532,995	2,327,082
Total.....	394	17,026,499	70,433,169	373	16,506,713	67,588,402

The Coke and Manufactured Gas Industry

Production from coke plants and from illuminating and fuel gas plants in Canada during 1945 was valued at \$68,483,305. This output was 0·1 per cent below the \$69,575,715 of the previous year.

Output for the year under review included 3,912,320 tons of coke valued at \$37,671,991 at the works, 70,021,849 M cubic feet of gas, of which 70,268,116 M cubic feet valued at \$25,841,609 were sold or used and by-products valued at \$4,969,705.

Thirty coke and gas works operated in 1945, including 11 by-products and bee-hive plants, 18 retort coal and water gas plants, and 1 propane gas plant. Fifteen of these works were located in Ontario, 4 in British Columbia, 6 in Quebec, 2 in Manitoba, 2 in Nova Scotia, 1 in New Brunswick and 1 in Alberta. In addition to these producers, 1 company in Quebec and 3 in Ontario purchased coke-oven gas and distributed it for domestic or commercial use, and data covering their operations have been included to round out the figures for the industry.

Output of coke from gas retorts, by-products and bee-hive ovens totalled 3,912,320 tons in 1945 compared with 4,017,696 tons in 1944 and 3,551,773 tons in 1943. By-product and bee-hive ovens produced 3,604,611 tons of coke in 1945 and gas retorts made 307,709 tons. In addition, 66,819 tons of petroleum coke were recovered in petroleum refineries and 17,795 tons of pitch coke in coal tar distillation plants.

Data on the distribution of coke (except petroleum and pitch coke) by producers show that 171,663 tons were sold directly to domestic consumers; 1,702,221 tons were used in associated works operated by the producing companies; 377,527 tons were used by coke plants as fuel or to make water gas; 755,628 tons were sold directly to consumers for foundry and other uses (other than domestic); 1,205,652 tons were sold to dealers for resale, and 32,724 tons were sold for export. The total distribution was 4,245,415 tons. Total stocks of coke in the hands of producers amounted to 363,810 tons at the end of 1945.

Imports into Canada of coke made from coal increased to 1,244,398 tons in 1945 from 813,352 tons in 1944, and exports decreased to 38,665 tons from 42,558 tons. Imports of petroleum coke during this period decreased to 192,122 tons from 221,970 tons and exports (including re-exports of imported coke) decreased to 22,260 tons from 27,104 tons.

Manufactured gas, sold and used, amounted to 70,268,116 M cubic feet in 1945 including 61,975,221 M cubic feet from by-product ovens and 8,292,895 M cubic feet from gas plants. Sales of gas by the producers totalled 21,551,189 M cubic feet of which 12,469,819 M cubic feet were from by-product ovens and 9,081,370 M cubic feet were from gas works. Most of the remaining gas was used as fuel in the producing plants or in their associated metallurgical works. These figures do not include 57,132 M cubic feet of (Pintsch) oil gas for lighting railway cars, 10,614,582 M cubic feet of still gas recovered at petroleum refineries, nor iron blast furnace gas and some producer gas which was recovered and used by the producers but for which no records are available.

The number of customers served with manufactured illuminating and fuel gas in 1945 was 529,231, the length of distributing mains was 2,984 miles, and the average calorific value of the gas sold ranged from 450-570 B.T.U. per cubic foot.

Table 222.—Materials Used in Coke and Gas Plants, 1944 and 1945

Material	Unit of measure	1944		1945	
		Quantity	Cost at works	Quantity	Cost at work
			\$		\$
Bituminous coal carbonized in ovens or retorts—					
(a) Canadian.....	ton	1,221,275	6,557,024	1,136,436	6,509,235
(b) Imported.....	ton	4,090,680	28,300,251	3,996,049	28,248,799
Bituminous coal for making water gas—					
Imported.....	ton	4,756	48,396	6,764	57,532
Coke for gas-making—					
(a) Purchased.....	ton	9,522	109,068	10,759	120,273
(b) Companies' own make.....	ton	85,726	691,636	91,122	742,909
Oil used for enriching water gas.....	Imp. gal.	10,195,113	810,200	10,655,717	836,488
Absorbing and wash oil.....	Imp. gal.	412,864	56,895	275,792	36,117
Caustic soda.....	lb.	2,029,873	41,293	1,936,288	39,239
Lime.....	ton	2,078	29,301	1,849	26,087
Water.....			43,123		39,967
Iron oxide.....	ton	9,194	71,545	7,357	57,441
Sulphuric acid, 66° Bé.....	lb.	70,498,674	570,177	67,830,415	560,007
All other materials.....			480,344		472,388
Total Cost.....			37,809,253		37,746,482

Table 223.—Products Made in Coke and Gas Plants, 1944 and 1945

Product	Unit of measure	1944		1945	
		Quantity	Gross selling value at works	Quantity	Gross selling value at works
			\$		\$
GAS MADE—					
Retort coal gas.....	M cu. ft.	4,778,328		12,661,741	
Coke oven gas.....	M cu. ft.	51,346,077		49,313,480	
Producer gas.....	M cu. ft.	20,498,555		2,031,124	
Water gas.....	M cu. ft.	5,605,752		5,885,110	
Propane and butane.....	M cu. ft.	108,945		130,394	
Total Gas Made.....	M cu. ft.	82,337,655		70,021,849	
GAS SOLD OR USED—					
Gas sold.....	M cu. ft.	21,101,351	19,392,362	21,551,189	19,916,643
Gas used in own coke or gas plants.....	M cu. ft.	28,133,317	3,780,315	20,999,668	2,656,833
Gas used in associated metallurgical works.....	M cu. ft.	26,861,445	2,387,023	24,531,485	2,160,752
Gas otherwise accounted for but not sold.....	M cu. ft.	218,933	54,268	328,489	125,693
Gas not accounted for.....	M cu. ft.	2,740,357	957,305	2,857,285	981,688
Total Gas Sold or Used.....	M cu. ft.	79,055,403	26,571,271	70,268,116	25,841,609
COKE MADE—					
Coke from by-product or bee-hive ovens.....	ton	3,437,555	34,295,098	3,332,578	34,210,045
Coke from gas retorts.....	ton	270,646	2,429,353	271,018	2,435,505
Coke breeze from by-product ovens.....	ton	274,849	975,641	272,033	940,017
Coke breeze from gas retorts.....	ton	34,646	80,066	36,691	86,424
Total coke.....	ton	4,017,696	37,780,158	3,912,320	37,671,991
OTHER PRODUCTS—					
Tar.....	Imp. gal.	37,907,935	2,281,504	37,995,126	2,193,711
Ammonia liquor.....	lb. NH ₃	1,569,615	16,461	1,703,170	16,457
Ammonium sulphate.....	pound	82,051,650	1,201,052	78,573,124	1,140,273
Benzol.....	Imp. gal.	7,246,900	1,000,170	6,911,277	894,618
Toluol, xylol and naphthalene.....	Imp. gal.	2,009,792	681,971	1,675,115	558,279
All other products.....			43,128		166,367
Grand Total.....			69,575,715		68,483,305

THE NATURAL GAS INDUSTRY

Production of natural gas in Canada totalled 48,411,585 thousand cubic feet valued at \$12,309,564 in 1945, an increase of 7.4 per cent in quantity and 7.8 per cent in value from the 1944 output of 45,067,158 thousand cubic feet at \$11,422,541. These figures include all natural gas sold for domestic, industrial or other uses and also the gas used as field fuel by the well operators but they do not include the gas which was allowed to go to waste.

The 1945 output in Alberta was the highest on record and amounted to 40,393,061 thousand cubic feet, exclusive of waste gas. About 72 per cent of this total came from the Turner Valley field. Output from this province in 1945 accounted for 83 per cent of the total for the Dominion. Sales of natural gas to customers in western Canada for domestic, commercial and industrial use amounted to 25,557,271 thousand cubic feet at \$5,738,359 in 1945.

In Saskatchewan there was a substantial increase in production to 163,824 thousand cubic feet in 1945 from 119,116 thousand cubic feet in 1944. In the Northwest Territories about 1,500 thousand cubic feet were recovered in 1945.

In Ontario the steady decline in output was checked in 1945 when a slight gain over the previous year was recorded, the total amounting to 7,199,970 thousand cubic feet. The demand for gas services from the distribution plants in eastern Ontario is still on the increase and the deficiency in the natural gas supply is being made up by the addition of manufactured gases, chiefly reformed still gas from the Imperial Oil Refineries Limited at Sarnia but also coke oven gas, oil gas and propane gas in times of peak demand. Mixed gas has been imported for some years from Buffalo to supply consumers along the Niagara River, and negotiations are under way to import gas from Detroit into the Windsor-Sarnia-London area.

Output in New Brunswick declined in 1945 to 653,230 thousand cubic feet, a decrease of 7 per cent.

Sales of natural gas to consumers in eastern Canada amounted to 8,374,375 thousand cubic feet valued at \$6,368,068 in 1945.

In 1945 the natural gas industry employed an average of 1,890 employees and output was valued at \$10,860,594. About \$2,993,000 was paid out for salaries and wages, \$227,000 for fuel and electricity and \$18,000 for process supplies. The industry as defined for statistical purposes is confined to the wells that produced natural gas only. If both crude petroleum and natural gas were produced the entire operations were included in the crude petroleum industry.

Table 224.—Production(*) of Natural Gas in Canada, by Provinces, 1944 and 1945

Province	1944		1945	
	M cu. ft.	Value	M cu. ft.	Value
		\$		\$
New Brunswick.....	702,464	341,636	653,230	317,568
Ontario.....	7,082,508	4,694,097	7,189,970	4,837,586
Saskatchewan.....	119,116	46,656	163,824	58,165
Alberta.....	37,161,570	6,339,817	40,393,061	7,095,910
Northwest Territories.....	1,500	335	1,500	335
Canada.....	45,067,158	11,422,541	48,411,585	12,309,564

(*) Sold and used by producer.

Table 225.—Principal Statistics for the Natural Gas Industry in Canada, 1936-1945

Year	Number of firms	Number of wells*	Average number of employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies	Gross selling value of products
				\$	\$	\$	\$
1936.....	227	3,253	2,075	2,456,918	77,658	1,376	9,141,691
1937.....	218	3,268	2,028	2,488,125	75,690	23,190	9,037,326
1938.....	218	3,325	1,966	2,506,121	67,725	15,162	9,831,564
1939.....	222	3,352	1,990	2,536,220	82,877	15,520	10,732,543
1940.....	236	3,438	2,189	2,748,740	85,561	8,793	11,203,103
1941.....	231	3,424	2,161	2,841,795	103,229	4,975	11,223,103
1942.....	212	3,566	1,940	2,826,811	92,489	12,313	11,356,350
1943.....	191	3,558	1,882	2,846,514	181,841	7,899	11,552,696
1944.....	211	3,621	1,810	2,885,654	188,003	13,149	9,772,357
1945.....	218	3,748	1,890	2,993,091	227,514	18,298	10,860,594

* See note to Table 22.

Table 226.—Principal Statistics, by Provinces, 1944 and 1945

Province	Number of firms	Number of wells*	Average number of employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies	Gross selling value of products
				\$	\$	\$	\$
1944							
New Brunswick.....	2	41	75	124,485	13,988	1,200	360,720
Ontario.....	186	3,458	1,234	1,810,971	133,987	10,949	4,694,097
Saskatchewan.....	1	3	5	5,667	.....	.....	46,656
Alberta.....	22	119	496	944,531	40,028	1,000	4,670,884
Canada.....	211	3,621	1,810	2,885,654	188,003	13,149	9,772,357
1945							
New Brunswick.....	2	40	82	139,179	15,004	1,500	345,628
Ontario.....	191	3,573	1,244	1,820,178	150,775	16,781	4,837,586
Saskatchewan.....	5	9	7	8,971	1,998	.....	58,165
Alberta.....	20	126	557	1,024,763	59,737	17	5,619,215
Canada.....	218	3,748	1,890	2,993,091	227,514	18,298	10,860,594

* Wells which produce natural gas only; if both petroleum and natural gas were produced the wells were included in the Crude Petroleum Industry.

Table 227.—Employees, Salaries and Wages, by Provinces, 1944 and 1945

	Number of employees					Salaries	Wages	Total salaries and wages
	On salaries		On wages		Total			
	Male	Female	Male	Female				
1944						\$	\$	\$
New Brunswick.....	9	10	54	2	75	37,311	87,174	124,485
Ontario.....	516	150	561	7	1,234	1,082,262	728,709	1,810,971
Saskatchewan.....	4	1	.....	.....	5	5,667	.....	5,667
Alberta.....	237	61	193	5	496	619,273	325,258	944,531
Canada.....	766	222	808	14	1,810	1,744,513	1,141,141	2,885,654
1945								
New Brunswick.....	10	9	61	2	82	38,545	100,634	139,179
Ontario.....	516	150	571	7	1,244	1,079,495	740,683	1,820,178
Saskatchewan.....	5	1	1	.....	7	7,450	1,521	8,971
Alberta.....	245	65	240	7	557	654,541	370,222	1,024,763
Canada.....	776	225	873	16	1,890	1,780,031	1,213,060	2,993,091

Table 228.—Wage-Earners, by Months, 1944 and 1945 (on the last work-day of each month)

Month	1944			1945		
	Male	Female	Total	Male	Female	Total
January.....	685	12	697	644	9	653
February.....	681	14	695	652	11	663
March.....	678	12	690	677	13	690
April.....	709	13	722	731	10	741
May.....	761	13	774	857	17	874
June.....	830	16	846	954	16	970
July.....	945	13	958	996	19	1,015
August.....	958	13	971	1,023	20	1,043
September.....	927	14	941	1,048	16	1,064
October.....	896	12	908	1,044	18	1,062
November.....	819	10	829	941	12	953
December.....	724	11	735	835	12	847
Average.....	808	14	822	873	16	889

Table 229.—Production of Natural Gas in Canada, 1926-1945

Year	Quantity	Value	Year	Quantity	Value
	M cu. ft.	\$		M cu. ft.	\$
1926.....	19,208,209	7,557,174	1936.....	28,113,348	10,762,243
1927.....	21,376,791	8,043,010	1937.....	32,380,991	11,674,802
1928.....	22,582,586	8,614,182	1938.....	33,444,791	11,587,450
1929.....	28,378,462	9,977,124	1939.....	35,185,146	12,507,307
1930.....	29,376,919	10,289,985	1940.....	41,232,125	13,000,593
1931.....	25,874,723	9,026,754	1941.....	43,495,353	12,665,116
1932.....	23,420,174	8,899,462	1942.....	45,697,359	13,301,655
1933.....	23,138,103	8,712,234	1943.....	44,276,216	13,159,418
1934.....	23,162,324	8,759,652	1944.....	45,067,158	11,422,541
1935.....	24,910,786	9,363,141	1945.....	48,411,585	12,309,564

Table 230.—Production of Natural Gas in Canada, by Provinces, 1936-1945

Year	New Brunswick	Ontario	Saskatchewan	Alberta	Northwest Territories	Canada
	M cu. ft.	M cu. ft.	M cu. ft.	M cu. ft.	M cu. ft.	M cu. ft.
1936.....	606,246	10,006,743	90,839	17,407,820	1,100	*28,113,348
1937.....	576,671	10,746,334	100,380	20,955,506	1,500	*32,380,991
1938.....	577,492	10,952,806	90,285	21,822,108	1,500	*33,444,791
1939.....	606,382	11,966,581	96,423	22,513,660	1,500	*35,185,146
1940.....	616,041	13,053,403	100,773	27,459,808	1,500	*41,232,125
1941.....	653,542	11,828,703	106,168	30,905,440	1,500	43,495,353
1942.....	619,380	10,476,770	117,124	34,482,585	1,500	45,697,359
1943.....	675,029	7,914,408	116,201	35,569,078	1,500	44,276,216
1944.....	702,464	7,082,508	119,116	37,161,570	1,500	45,067,158
1945.....	653,230	7,199,970	163,824	40,393,061	1,500	48,411,585

* Includes 600 M cu. ft. in Manitoba.

DOMINION BUREAU OF STATISTICS

Table 231.—Production (b) of Natural Gas in Canada, by Months and by Provinces, 1945

Month	New Brunswick	Ontario	Saskatchewan	Alberta	Canada
	M cu. ft.	M cu. ft.	M cu. ft.	M cu. ft.	M cu. ft.
January.....	74,402	960,984	22,582	4,224,751	5,282,719
February.....	68,091	847,876	20,862	3,707,356	4,644,185
March.....	59,253	631,281	16,159	3,478,752	4,185,445
April.....	62,725	595,412	13,351	3,315,994	3,987,482
May.....	61,849	612,295	9,178	2,936,358	3,619,680
June.....	53,887	488,508	5,279	2,666,687	3,154,361
July.....	36,721	347,691	3,477	2,662,564	(a)3,050,953
August.....	27,066	360,632	5,139	2,666,389	(a)3,059,726
September.....	32,350	404,211	8,155	2,933,229	(a)3,373,445
October.....	47,030	543,852	12,194	3,360,120	3,963,196
November.....	63,841	597,819	22,358	4,157,296	4,841,314
December.....	66,015	809,409	25,090	4,343,565	5,244,079
Total.....	653,230	7,199,970	163,824	40,393,061	48,411,535

(a) Includes production from Fort Norman, Northwest Territories.

(b) Sales and consumption by producers.

Table 232.—Sales Only of Manufactured and Natural Gas in Canada, 1944 and 1945

	1944			1945		
	Number of customers	Quantity sold M cu. ft.	Revenue from sales \$	Number of customers	Quantity sold M cu. ft.	Revenue from sales \$
MANUFACTURED GAS						
Domestic.....	488,653	12,098,351	13,334,020	493,307	12,720,922	13,923,374
House heating.....	5,864	1,333,339	731,868	6,217	1,679,796	914,981
Industrial.....	3,236	5,789,717	3,435,914	3,356	5,109,828	2,996,984
Commercial.....	29,056	3,671,522	3,253,155	29,619	3,893,848	3,429,237
Miscellaneous.....	116	47,350	46,562	114	48,423	49,040
Total.....	526,925	22,937,279	20,801,519	532,613	23,452,817	21,318,616
NATURAL GAS						
Domestic.....	186,269	14,565,801	7,081,369	194,098	16,875,164	7,975,469
Industrial.....	1,122	8,165,864	1,950,353	1,162	8,375,151	1,930,013
Commercial.....	10,932	7,419,380	1,890,696	11,728	8,276,943	2,164,934
Miscellaneous.....	506	1,062,106	47,864	482	404,328	36,011
Total.....	198,829	31,213,151	10,970,282	207,470	33,931,586	12,106,427
Total—All Gas.....	725,754	54,150,430	31,771,801	740,083	57,384,403	33,425,043

NOTE: Sales figures represent sales by distributing companies to consumers. Amounts used by producers are not included.

Table 233.—Production of Alberta, by Fields(*)

	1944	1945
	M cu. ft.	M cu. ft.
TURNER VALLEY—		
Shallow wells.....	42,840	26,000
Limestone gas wells.....	11,396,668	
Limestone oil wells.....	29,947,394	37,634,452
Less gas repressed by British American Oil.....	9,374	108,144
Less Metering Difference, 1945.....		8,206
Limestone gas and oil wells combined, 1945.....	41,377,528	37,544,102
Foremost.....	38,228	198,398
Viking.....	1,858,585	8,450,983
Kinsella.....	5,172,263	
Medicine Hat.....	3,227,006	
Redcliff.....	822,282	3,285,920
Other fields.....	768,389	1,132,781
		1,563,254
	53,264,281	52,175,438

Viking and Kinsella combined 1945.

(*) Information from Petroleum and Natural Gas Conservation Board.

Table 234.—Production of Natural Gas in Ontario, by Fields, 1944 and 1945

County	Field	1944	1945
		M cu. ft.	M cu. ft.
Essex.....	Kingsville.....	52,949	27,416
	Tilbury, Romney and Raleigh.....	2,108,473	2,125,982
	Declute.....	362,310	461,428
Kent.....	Dover.....	181,211	162,286
	Chatham.....	336,852	297,978
	Zone.....	277,920	665,568
Lambton.....	Dawn.....	685,845	421,320
Middlesex.....	Oil Springs.....		
	Mosa.....		
Oxford.....	South Norwich.....	1,065	90
	Brownsville (*).....		
Elgin.....	Bayham.....	37,391	30,036
Elgin.....	Bayham.....	22,374	23,888
	Malahide.....	39,652	25,445
Norfolk.....	Norfolk.....	242,806	463,243
Lincoln.....	Lincoln.....		
Haldimand.....	Haldimand.....	2,267,075	2,016,669
Wentworth.....	Wentworth.....		
Welland.....	Welland.....	311,417	331,955
Brant.....	Onondaga, Brantford and Tuscarora.....	81,168	72,666
Prince Edward.....	Hallowell.....		
Wells in surface drift.....	Harwich and Howard Tps.....	14,000	14,000
Private wells.....		60,000	60,000
Total Produced.....		7,082,508	7,199,970

(*) Dereham Tp.—17,157 M cu. ft.; Bayham Tp.—12,879 M cu. ft....1945;
Dereham Tp.—27,108 M cu. ft.; Bayham Tp.—10,283 M cu. ft....1944.

Table 235.—Natural Gas Wells in Ontario, by Townships, 1944 and 1945

Township	1944				1945			
	No. of producing wells in operation Dec. 31, 1943	No. of wells abandoned this year	No. of dry wells drilled this year	No. of producing wells drilled this year	No. of producing wells in operation Dec. 31, 1944	No. of wells abandoned this year	No. of dry wells drilled this year	No. of producing wells drilled this year
Aldborough.....			1				1	
Anderson.....								
Bayham.....	37	11			32	8		
Bertie.....	158	1	1	8	163	2	3	1
Beverly.....				1	1			12
Binbrook.....	40	10			42			
Brant.....	7							
Brantford.....	2				2			
Brooke.....			1					
Caistor.....	76	4		7	77	1		6
Camden Gore.....			3				4	
Canboro.....	144	7		1	145	7	1	10
Cayuga North.....	195	12	7	17	206	3	6	19
Cayuga South.....	68	1	12	21	89		4	
Charlotteville.....	15		1		15		1	2
Chatham.....	21		3	4	23			
Colchester.....								
Crowland.....	26	1		1	27	2		5
Culross.....								
Dawn.....	30	4	1	1	31	1		
Delaware.....								
Delhi Village.....	3				3			
Dereham.....	6	6			3	2		
Dorchester North.....								
Dover.....	17	1			15	3		
Dover East.....					1			
Dunn.....	43	1		5	46	1	1	8
Dunwich.....								
Enniskillen.....	2	1			2		1	1
Gainsboro.....	12	1			11			2
Glanford.....	10	2			10			
Gosfield South.....	24				24			
Hallowell.....	1	15						
Harwich.....			1					
Hobson.....			1					
Houghton.....	4				4			
Humberstone.....	77	2	1	3	78	7		1
Kincardine.....								
Malahide.....	50	31	4		21	1	1	1
Malden.....		1	2					
Marysburg.....								
Mersea.....	3				3			
Middleton.....	46	12	3	1	33	1	2	2

Table 235.—Natural Gas Wells in Ontario, by Townships, 1944 and 1945—Concluded

Township	1944				1945			
	No. of producing wells in operation Dec. 31, 1943	No. of wells abandoned this year	No. of dry wells drilled this year	No. of producing wells drilled this year	No. of producing wells in operation Dec. 31, 1944	No. of wells abandoned this year	No. of dry wells drilled this year	No. of producing wells drilled this year
Mosa.....		1	1				4	
Moulton.....	105	6	2	4	105	2	4	2
Nassageya.....								
Norwich South.....	1			1	1			
Nottawasaga.....		1	1					
Oneida.....	114	3	17	12	123	4	5	1
Onondaga.....	24	7			21	1		
Orford.....								
Oxford North.....								
Oxford West.....								
Port Dover Village.....	3				3			
Port Rowan.....	4				4			
Rainham.....	318	13	6	10	312	17	1	5
Raleigh.....	57	5	1		53	1		
Romney.....	139	3			133	8		4
Sarnia.....						13		
Seneca.....	152	10	3		151	5	4	4
Sherbrooke.....	14	3	1	2	17			
Sombra.....								
Southwold.....								
Tilbury East.....	125	6			118	5		
Townsend.....	21		14	18	39		17	24
Tuscarora.....	70	1	4		69	3	1	
Wainfleet.....	34	4	1	9	39	1	3	3
Walpole.....	493	4	7	36	521	7	17	44
Walsingham North.....	8				8		1	
Walsingham South.....	14				15			
Westminster.....			2					
Willoughby.....	53	1			53	2		
Windham.....	21		1		19	1		
Woodhouse.....	87		5	5	92		3	4
Yarmouth.....								
Zone.....			7	14	14		6	16
Private wells.....	306			11	311		2	9
Surface wells.....	69				69			
Total.....	3,346	193	116	194	3,397	109	92	186

Table 236.—Natural Gas Pipeline Mileage in Canada, 1944 and 1945

Province	Actual miles of mains				Miles of equivalent 3" mains			
	Gathering and transmission		Distribution		Gathering and transmission		Distribution	
	1944	1945	1944	1945	1944	1945	1944	1945
New Brunswick.....	20	20	65	65	36	36	73	73
Ontario.....	2,325	2,330	2,382	2,057	3,901	3,922	2,578	2,537
Saskatchewan.....		2	6	6		4	4	4
Alberta.....	692	706	626	656	2,250	2,287	1,184	1,213
Canada.....	3,037	3,058	3,079	2,784	6,187	6,249	3,839	3,827

THE PETROLEUM INDUSTRY IN CANADA

Including (1) Production of Crude Petroleum, and (2) Petroleum Products

(1) Production of Crude Petroleum

Production of crude petroleum and natural gasoline in Canada during 1945 totalled 8,482,796 barrels valued at \$13,632,248, compared with 10,099,404 barrels worth \$15,429,900 in 1944. The decline amounted to 16 per cent in quantity and 12 per cent in value, and the quantity was the lowest reported since 1939.

Alberta accounted for 94 per cent of the total for Canada, but output in this province at 7,979,786 barrels was 11 per cent lower than in the previous year. The decline was entirely in the Turner Valley field which yielded 7,422,061 barrels in the year under review, compared with

8,326,314 barrels in 1944. In other Alberta fields, the output increased to 557,725 barrels from 401,052 barrels, the principal gains being in the Conrad, Princess, and Lloydminster areas.

In Ontario the downward trend continued with output at 113,325 barrels in 1945 against 125,067 barrels in 1944. Substantial declines were registered in each of the major fields in this province.

In the Northwest Territories the sharp drop to 345,171 barrels from 1,223,675 barrels was due to the discontinuation of the Canol project and the closing of the Whitehorse refinery early in the year. Only a few of the wells in the Fort Norman field continued in operation to provide aviation and industrial fuel for the mining areas in this district.

In Saskatchewan a substantial production of crude oil was reported for the first time, this amounting to 14,374 barrels. Output was entirely from the Lloydminster district and most of it was used by the Canadian National Railways for fuel purposes. Three wells were in production at the year-end on the Saskatchewan side of this field.

In New Brunswick, the output advanced to 30,140 barrels from 23,296 barrels in 1944.

In 1944 the crude petroleum industry employed an average of 1,968 persons and distributed \$3,898,662 in salaries and wages. About \$748,351 were spent for fuel and electricity and \$117,708 for process supplies. Sales by the industry, including some natural gas, were valued at \$14,121,921. Reports were received from 2,222 wells which were in operation during the year.

Imports of crude petroleum into Canada totalled 56,806,232 barrels in 1945 compared with 57,047,840 barrels in 1944. The 1945 supply came from the following countries: United States 32,029,686 barrels; Venezuela 15,394,629 barrels; Colombia 8,231,686 barrels; Ecuador 1,142,371 barrels; and other countries 7,860 barrels.

Table 237.—Principal Statistics for the Crude Petroleum Industry in Canada, 1936-1945

Year	Number of operating wells	Number of employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies	Gross value of sales (*)
			\$	\$	\$	\$
1936.....	2,266	1,052	1,298,592	235,210	274,806	3,949,333
1937.....	2,328	1,620	2,340,359	471,187	638,779	6,002,693
1938.....	2,400	1,894	2,656,112	338,780	802,982	10,127,833
1939.....	2,389	1,780	2,567,983	707,067	724,988	10,742,977
1940.....	2,360	1,741	2,835,410	934,834	533,161	11,486,078
1941.....	2,312	1,844	3,254,817	609,616	194,182	15,011,324
1942.....	2,253	1,972	3,648,965	971,504	235,959	16,876,123
1943.....	2,197	2,399	5,212,895	709,879	202,479	16,906,780
1944.....	2,264	2,547	5,814,676	1,000,484	242,311	15,818,358
1945.....	2,222	1,968	3,898,662	748,351	117,708	14,121,921

(*) Includes some natural gas sold by the industry.

Table 238.—Production of Crude Petroleum in Canada, by Provinces, 1926-1945

Year	New Brunswick	Ontario	Alberta	Northwest Territories	Canada
	(Barrels of 35 Imp. gal.)				
1926.....	10,544	137,850	216,050		364,444
1927.....	18,244	139,606	318,741		476,591
1928.....	8,043	134,094	482,047		624,184
1929.....	7,499	121,194	988,675		1,117,368
1930.....	6,758	117,302	1,398,160		1,522,220
1931.....	6,577	122,365	1,413,631		1,542,573
1932.....	6,408	130,343	906,751	910	1,044,412
1933.....	8,835	136,058	995,832	4,608	1,145,333
1934.....	11,106	141,385	1,253,966	4,438	1,410,895
1935.....	12,954	165,041	1,263,510	5,115	1,446,620
1936.....	17,112	165,495	1,312,368	5,399	1,500,374
1937.....	18,089	165,205	2,749,085	11,371	2,943,750
1938.....	19,276	172,641	6,751,312	22,855	6,966,054
1939.....	22,799	206,379	7,576,932	20,191	7,826,301
1940.....	22,167	187,644	8,362,203	18,633	(*) 8,590,978
1941.....	31,359	160,238	9,918,577	23,664	10,133,838
1942.....	28,089	143,845	10,117,073	75,789	10,364,796
1943.....	24,530	132,492	9,601,530	293,750	10,052,302
1944.....	23,296	125,067	8,727,366	1,223,675	10,099,404
1945.....	30,140	113,325	7,979,786	345,171	(†) 8,432,796

(*) Includes 331 barrels in Saskatchewan.

(†) Includes 14,374 barrels in Saskatchewan.

Table 239.—Production of Crude Petroleum in Canada, by Fields, 1944 and 1945

	1944		1945	
	Barrels	Total value \$	Barrels	Total value \$
NEW BRUNSWICK.....	23,296	32,832	30,140	42,413
ONTARIO—				
Petrolia and Enniskillen.....	41,433	96,853	39,350	92,072
Oil Springs.....	28,537	70,774	25,657	63,350
Moore Township.....	133	311	247	578
Sarnia Township.....	268	626	190	445
Plympton Township.....	27	63	9	21
Bothwell Township and Thamesville.....	24,966	58,360	22,791	53,327
West Dover, Romney, Raleigh and Tilbury East.....	7,642	17,864	5,935	13,887
Onondaga.....	7	16	24	56
Mosa Township.....	15,585	36,431	14,344	33,562
Dunwich.....	1,728	4,039	1,677	3,924
Dawn and Euphemia.....	257	601	362	847
Warwick, Metcalfe and Adelaide Townships.....	4,484	10,482	2,739	6,409
Total Ontario.....	125,067	296,420	113,325	265,478
SASKATCHEWAN.....			14,374	15,362
ALBERTA—				
Turner Valley.....	8,326,314	13,322,102	7,422,061	11,875,293
Red Coulee.....	3,835	4,755		
Wainwright-Ribstone (heavy crude).....	397,217	1,141,204	557,725	1,294,394
Taber-Moose Dome.....				
Total Alberta.....	8,727,366	14,468,061	7,979,786	13,169,692
NORTHWEST TERRITORIES.....	1,223,675	632,587	345,171	136,303
Canada.....	10,099,404	15,429,900	8,482,796	13,632,248

Table 240.—Principal Statistics for the Crude Petroleum Industry, by Provinces, 1945^(a)

	Ontario	Saskat- chewan	Alberta	Northwest Territories	Canada
Number of firms.....	113	3	112	1	229
Number of active wells (b).....	1,590	3	545	58 ^(c)	2,232
Number of employees—On salary.....	25	1	806	2	834
On wages.....	144		984	6	1,134
Total.....	169	1	1,790	8	1,963
Salaries and wages—Salaries..... \$	27,680	450	1,572,520	6,170	1,606,820
Wages..... \$	112,755		2,162,172	16,915	2,291,842
Total..... \$	140,435	450	3,734,692	23,085	3,898,662
Selling value of products (gross)..... \$	268,478	15,362	13,701,778	136,303	14,121,921
Cost of fuel and electricity..... \$	35,511	1,171	711,669		748,351
Cost of process supplies used..... \$	17,111	8	90,589	10,000	117,708
Selling value of products (net)..... \$	215,856	14,183	12,899,520	126,303	13,255,862

(a) Data for New Brunswick are included in the Natural Gas Industry.

(b) Includes wells still drilling and dry wells completed in year specified.

(c) Includes 26 in New Brunswick.

Table 241.—Employees, Salaries and Wages in the Crude Petroleum Industry, 1940-1945

Year	Number of employees				Total em- ployees	Salaries	Wages	Total salaries and wages
	On salaries		On wages					
	Male	Female	Male	Female				
						\$	\$	\$
1940.....	299	49	1,393		1,741	754,229	2,081,181	2,835,410
1941.....	356	60	1,428		1,844	867,638	2,387,179	3,254,817
1942.....	371	113	1,483	5	1,972	997,609	2,651,356	3,648,965
1943.....	496	155	1,736	12	2,399	1,547,605	3,665,290	5,212,895
1944.....	641	238	1,646	22	2,547	2,050,411	3,764,265	5,814,676
1945.....	643	191	1,107	27	1,968	1,606,820	2,291,842	3,898,662

Table 242.—Wage-Earners, by Months, 1944 and 1945 (Number on pay-roll on the last work-day of each month)

Month	1944			1945		
	Male	Female	Total	Male	Female	Total
January.....	1,680	15	1,695	1,042	23	1,065
February.....	1,629	15	1,644	1,034	25	1,059
March.....	1,582	15	1,597	1,075	25	1,100
April.....	1,587	17	1,604	1,023	25	1,048
May.....	1,664	17	1,681	1,044	22	1,066
June.....	1,678	17	1,695	1,107	21	1,128
July.....	1,737	22	1,759	1,132	25	1,157
August.....	1,687	22	1,709	1,211	27	1,238
September.....	1,585	21	1,606	1,113	26	1,139
October.....	1,503	23	1,526	1,093	26	1,119
November.....	1,538	22	1,560	1,042	19	1,061
December.....	1,470	21	1,491	1,024	20	1,044

Table 243.—Production of Crude Petroleum in Canada, by Months, 1945
(Barrel = 35 Imperial Gallons)

Month	(*) New Brunswick	Ontario	Saskatchewan	Alberta (*)	(*) North-west Territories	Canada	
	Barrels	Barrels	Barrels	Barrels	Barrels	1945	1944
January.....	1,800	7,067		738,218	125,845	872,930	831,512
February.....	1,646	6,659		645,321	117,349	770,975	788,257
March.....	1,892	10,146		718,358	41,278	771,674	871,446
April.....	2,313	9,935		671,653	2,002	685,903	838,010
May.....	2,263	10,012		688,487	7,871	708,633	852,335
June.....	3,106	9,567		644,964	8,466	666,103	818,678
July.....	3,198	10,905		673,598	1,997	689,698	806,342
August.....	3,082	10,067		662,964	2,010	678,123	827,603
September.....	2,698	9,522	4,132	619,013	15,247	650,612	852,263
October.....	3,006	10,962	4,815	646,305	10,830	675,918	878,082
November.....	2,913	9,212	1,583	634,271	4,102	652,081	855,752
December.....	2,223	9,271	3,844	636,634	8,174	660,146	879,124
Total.....	30,140	113,325	14,374	7,979,786	345,171	8,482,796	10,099,404

(*) These figures include total output each month.

Table 244.—Petroleum Wells in Canada, by Provinces, 1943-1945

—	New Brunswick	Ontario	Saskatchewan	Alberta	Northwest Territories	Canada
Productive wells at beginning of year.....1943	21	1,852		305	20	2,198
.....1944	22	1,728		365	26	2,141
.....1945	23	1,690		426	57	2,196
Number of productive wells drilled.....1943	1	1		66	9	77
.....1944	1	6		81	32	120
.....1945	3	5	3	66	1	78
Number of wells abandoned.....1943		144		6	3	153
.....1944		47		19	1	67
.....1945		1,022		13		1,035
Number of dry wells drilled.....1943		17		19	1	37
.....1944		18		41		59
.....1945		19		42		61
Number of productive wells in operation at end of year.....1943	22	1,728		365	26	2,141
.....1944	23	1,690		426	57	2,196
.....1945	26	1,579	3	479	58	2,145

Table 245.—Exports of Petroleum and Its Products from Canada, 1944 and 1945

Item	1944		1945	
	Quantity	Value	Quantity	Value
		\$		\$
Petroleum, crude.....gal.				
Oil, coal and kerosene, refined.....gal.	1,036,227	117,666	6,604,122	703,719
Gasoline and naphtha.....gal.	22,817,885	5,706,320	56,824,754	8,255,473
Fuel oil.....gal.	46,794,915	2,927,303	32,615,854	1,925,593
Lubricating oil (from January 1, 1944).....gal.	697,710	213,706	947,089	287,699
Oil, mineral, n.o.p. (including lubricating oil prior to 1944).....gal.	465,790	83,268	143,838	32,021
Wax, mineral.....cwt.	1,145	8,411	18,295	47,943

Table 246.—Imports into Canada of Petroleum, Asphalt and Their Products, 1944 and 1945

Item	1944		1945	
	Quantity	Value	Quantity	Value
		\$		\$
Asphaltum or asphalt, solid or not.....cwt.	121,064	318,308	128,418	326,313
Oil, imported by miners or mining companies, for the concentration of ores or metals.....gal.	83,192	54,249	142,866	91,017
Crude petroleum for refining .8155 specific gravity (42.0 A.P.I.) or heavier at 60° Fah.....M gal.	1,996,445	71,934,216	1,987,943	72,310,214
Crude petroleum for refining, lighter than .8155 specific gravity (42.0 A.P.I.) at 60° Fah.....gal.	2,295	97		
Crude petroleum, n.o.p.....gal.	227,218	9,105	275,138	10,460
Fuel oil, ex-warehoused, for ships' stores.....gal.	23,215,553	1,030,184	35,395,731	1,288,061
Coal oil and kerosene lighter than .8236 specific gravity at 60° Fah, n.o.p.....gal.	8,890,511	581,669	13,039,459	801,575
Engine distillate .8017 specific gravity or heavier at 60° Fah.....gal.	474,253	33,965	356,012	23,388
Gasoline, lighter than .8236 specific gravity at 60° Fah.....gal.	67,498,115	11,415,619	49,352,979	7,764,143
Natural casinghead, compression or absorption gasoline lighter than .6690 specific gravity (80.0 A.P.I.) at 60° Fah, when imported by refiners of crude petroleum for blending with gasoline wholly produced in Canada.....gal.	23,902,460	1,771,836	29,197,565	1,807,271
Lubricating oils, composed wholly or in part of petroleum and costing less than 25 cents per gallon.....gal.	7,475,273	1,300,413	4,551,635	760,431
Lubricating oils, n.o.p.....gal.	6,217,714	3,131,929	5,964,265	2,863,674
Oils, mineral, n.o.p.....gal.	1,713,954	987,065	3,840,662	1,677,124
Imports of petroleum, n.o.p., .8236 specific gravity (40.3 A.P.I.) or heavier at 60° Fah.....gal.	63,323,016	2,561,065	53,350,962	2,164,781
Petroleum greases and lubricating greases, n.o.p.....lb.	10,516,483	669,316	10,500,345	640,800
Refined petroleum jellies and oils for toilet, medicinal, edible or similar purposes.....lb.		460,419		491,631
Paraffin wax.....lb.	17,564,432	1,142,662	18,544,302	1,114,356
Paraffin wax candles.....lb.	138,468	34,300	169,966	44,163
Products of petroleum, n.o.p., lighter than .8236 specific gravity at 60° Fah.....gal.	1,300,046	157,944	1,482,657	190,069
Liquefied petroleum gases.....gal.		342,648		685,964

OIL SHALE

(Bureau of Mines, Ottawa)

There are large deposits of oil shale in different parts of Canada, the best known occurrences being in Pictou and Antigonish counties, Nova Scotia, and Albert and Westmorland counties, New Brunswick. As shale oil cannot compete with petroleum at present prices, none of these deposits has been actively developed on a commercial scale.

No production has been reported for a number of years and no oil shale is being imported into Canada.

Experimental plants were erected in 1928-30 near Rosevale, New Brunswick, and New Glasgow, Nova Scotia, to treat local shales but they operated only for short periods.

For many years the large-scale production of oil shale was confined to Scotland, but deposits in Manchuria and Esthonia were being developed in 1938 on a large scale. The production of these countries in 1938 was: Scotland, 1,551,346 tons; Esthonia, 1,450,885 tons; and Manchuria, approximately 3,000,000 tons. In 1939 South Africa is reported to have produced 3,000,000 gallons of shale oil. In Australia the Federal and New South Wales Governments are reported to be giving considerable assistance to the shale oil industry, the production in 1942 being 1,600,000 gallons of shale oil.

A large amount of investigational work has been carried out by the Bureau of Mines, Ottawa, including the determination of the petroleum content of representative samples from various localities; the determination of important factors affecting the recovery of crude petroleum by destructive distillation and of the character of the petroleum recovered; and the investigation of the process designed for the distillation of oil shale.

In 1942, the Mines and Geology Branch, Department of Mines and Resources, Ottawa, drilled some of the oil shale deposits in New Brunswick to determine their possibilities as a source of oil and lubricants under war conditions. A total of 43 holes were drilled in oil shale deposits in the Rosevale area and in the vicinity of Taylor Village, New Brunswick; 36 holes were also drilled in deposits at Alberta Mines, New Brunswick. The conclusion was reached after assaying more than 3,300 samples, that the over-all grade of the shales in the areas mentioned is too low to be of economic interest even under present conditions.

Owing to the depletion of petroleum reserves, interest has been renewed in oil shale in the United States. It is announced that the U.S. Bureau of Mines is building an oil shale research and development laboratory at the University of Wyoming at Laramie. A site has also been selected, in Colorado, for an oil shale demonstration plant to cost \$1,500,000.

(2) Petroleum Products Industry

Statistics for the Petroleum Products Industry are from establishments in Canada which are occupied chiefly in (a) the refining of crude oil to produce gasoline, fuel oil, etc., and (b) the blending or compounding of lubricating oils and greases. Output figures for 1945 included \$200,233,529 for petroleum refineries and \$1,450,150 for concerns engaged in blending oils and greases, against corresponding totals in 1944 of \$209,125,332 and \$1,422,084 respectively.

Table 247.—Materials Used in Petroleum Refineries, 1944 and 1945

Material	Unit of measure	1944		1945	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Crude oil (under 60° A.P.I.) in its natural state, from Canadian wells.....	Imp. gal.	287,359,621	16,061,249	261,649,701	14,448,892
Absorption gasoline, etc., from Canadian wells (run to stills).....	Imp. gal.	13,176,450	796,167	11,460,721	666,550
Crude oil, in its natural state, imported (run to stills)—					
(a) From United States.....	Imp. gal.	1,162,235,098	73,219,333	1,116,775,550	67,573,181
(b) From Other Countries.....	Imp. gal.	820,436,701	50,612,860	915,009,313	55,323,332
Crude oil, not in its natural state (run to stills).....	Imp. gal.				
Phenol.....	Imp. gal.	3,650,151	548,758	2,891,487	431,981
Phenol for blending.....	Imp. gal.	892,069	126,539	1,007,329	141,610
Sulphuric acid, 66° Be.....	pound	42,768,370	461,306	39,989,522	437,370
Sulphur.....	pound	102,090	2,628	102,958	2,659
Caustic soda.....	pound	8,331,182	223,316	8,503,517	235,011
Soda ash.....	pound	480,416	11,335	510,755	11,742
Litharge.....	pound	369,981	30,346	246,523	21,325
Fuller's earth, bentonite and other clays.....	pound	27,993,850	653,741	28,604,000	685,761
Compounding materials.....			353,699		362,323
Tetraethyl fluid.....	c.c.	1,393,917,796	3,311,309	2,002,251,865	4,243,451
Blending stocks for aviation gasoline.....	Imp. gal.	14,997,331	4,769,116	11,192,158	3,515,960
Other materials.....			896,425		1,484,642
Shipping containers.....			609,244		599,329
Total.....			152,687,371		150,185,119

Table 248.—Materials Used in Lubricating Oils and Greases Industry, 1944 and 1945

Material	Unit of measure	1944		1945	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Compounding stocks (oils, etc.).....	Imp. gal.	1,431,261	511,831	1,536,850	589,430
Tallow and grease.....	lb.	174,151	20,875	137,817	16,871
All other materials.....			140,361		155,194
Shipping containers.....			198,226		206,815
Total.....			871,293		968,310

Table 249.—Products Made in the Lubricating Oils and Greases Industry, 1944 and 1945

Product	Unit of measure	1944		1945	
		Quantity	Gross selling value at works	Quantity	Cost at works
			\$		\$
Greases, lubricating.....	pound	1,252,890	187,240	1,117,561	157,910
Oils, lubricating.....	gallon	1,201,271	1,080,979	1,350,684	1,157,577
Soaps and powders.....			40,449		42,039
All other products.....			113,416		92,624
Total.....			1,422,084		1,450,150

Table 250.—Products Made in Petroleum Refineries, 1944 and 1945

Product	Unit of measure	1944		1945	
		Quantity	Gross selling value at works	Quantity	Gross selling value at works
			\$		\$
MADE FOR SALE—					
Gasoline ⁽¹⁾ —Straight run—Aviation.....	Imp. gal.	106,179,849	20,824,870	19,174,916	3,681,285
Standard.....	Imp. gal.	361,781,250	42,181,182	447,191,539	50,994,481
By cracking ⁽²⁾ —Aviation.....	Imp. gal.	1,083,600	159,525		
Standard.....	Imp. gal.	501,611,868	59,577,015	486,436,530	56,060,726
Stove oil (40°-42·5° A.P.I.).....	Imp. gal.	28,437,386	1,730,572	39,408,805	2,401,840
Gas and light fuel oil (20°-40° A.P.I., except diesel).....	Imp. gal.	117,459,777	6,902,795	126,893,270	8,038,426
Diesel fuel oil (all fuel oil sold under this name).....	Imp. gal.	91,905,867	5,087,576	116,571,599	6,515,379
Residual fuel oil (10°-20° A.P.I.).....	Imp. gal.	561,755,157	26,899,271	538,971,718	26,036,188
Tractor and engine distillate.....	Imp. gal.	42,125,587	4,016,904	36,965,460	3,511,911
V.M. and P. or solvent naphtha.....	Imp. gal.	27,542,328	3,301,325	27,682,130	3,287,078
Kerosene.....	Imp. gal.	28,108,877	3,261,941	33,321,509	3,824,092
Lubricating oil.....	Imp. gal.	46,450,828	10,814,700	50,018,247	11,854,874
Lubricating grease.....	pound	19,853,223	869,580	19,035,006	850,874
Asphalt.....	Imp. gal.	62,909,214	5,419,257	69,247,333	6,092,110
Petroleum coke.....	ton	71,158	507,166	59,559	472,933
Other products ⁽³⁾			9,400,632		8,457,745
Total—Made for Sale.....			200,951,911		192,090,042
MADE FOR OWN USE—					
Gasoline—Straight run.....	Imp. gal.	267,342	46,682	191,255	45,891
By cracking process.....	Imp. gal.	17,263	2,667	22,715	3,430
Stove oil.....	Imp. gal.	1,075	53	1,795	92
Gas and light fuel oil (20°-40° A.P.I.).....	Imp. gal.	45,223	2,982	112,012	5,289
Diesel fuel oil.....	Imp. gal.	116,372	6,476	124,359	6,887
Residual fuel oil (10°-20° A.P.I.).....	Imp. gal.	101,424,680	4,609,437	105,210,613	4,824,466
Tractor and engine distillate.....	Imp. gal.	245	19	1,135	71
Kerosene.....	Imp. gal.	68,236	7,707	52,898	6,020
Lubricating oil.....	Imp. gal.	117,341	26,575	64,848	14,826
Asphalt.....	Imp. gal.	213,197	17,570	55,519	4,917
Petroleum coke.....	ton	1,651	10,997	7,260	36,269
Still gas.....	M cu. ft.	9,167,488	3,193,500	8,974,774	2,947,947
Other products.....			245,756		247,382
Total—Made for Own Use.....			8,170,421		8,143,487
Grand Total.....			209,125,332		200,233,529

⁽¹⁾ Includes recoveries from Turner Valley naphtha and natural gasoline run to refinery stills but does not include the imported casinghead gasoline which was used for blending at the refineries.

⁽²⁾ Includes polymer gasoline.

⁽³⁾ Includes wax, candles, still gas for sale, butane, propane, cumene, etc. These items were reported by fewer than three companies, so, in accordance with the provisions of the Statistics Act, the figures cannot be shown separately.

CHAPTER EIGHT

THE NON-METALLIC MINING INDUSTRIES IN CANADA. (Other than Fuels)

Including detailed data relating to operations in the following industries:—

Asbestos	Miscellaneous	Magnesitic dolomite
Feldspar, Nepheline	Barite	Magnesium sulphate
Syenite and Quartz	Corundum	Mineral waters (natural)
Gypsum	Diamonds	Phosphate
Iron oxides (ochre)	Diatomite	Silica Brick
Mica	Fluorspar	Sodium carbonate
Peat fuel	Garnet	Sodium sulphate
Peat moss	Graphite	Strontium minerals
Salt	Grindstones, etc.	Sulphur (Pyrite)
Talc and soapstone		

THE ASBESTOS MINING INDUSTRY

Production of asbestos in Canada in 1945 totalled 466,896 short tons valued at \$22,805,157, compared with 419,265 tons worth \$20,619,516 in 1944. Nearly all of the mineral came from Quebec, but a small tonnage was mined in Ontario.

The eleven firms engaged in asbestos mining during 1945 employed 4,237 persons to whom \$6,679,885 were paid in wages and salaries. Expenditures for fuel and electricity amounted to \$1,684,017 and process supplies and containers cost \$2,551,708. In addition, the industry paid \$3,453,895 in taxes in 1945 and spent \$934,294 on new equipment or plant extensions.

Shipments of asbestos in 1945 included 981 tons of crude at \$415,203; 219,767 tons of fibres worth \$16,628,467, and 246,148 tons of shorts valued at \$5,761,487.

The major portion of the Canadian production was exported. During the year under review, the exports included 863 tons of crude asbestos valued at \$366,563; 209,765 tons of fibres worth \$15,857,555, and 229,929 tons of asbestos waste, refuse and shorts valued at \$341,648.

A general statement on the Asbestos Industry is quoted from a report of the Bureau of Mines, Ottawa:

"Asbestos of commerce consists mostly of the three varieties known as chrysotile, amosite, and crocidolite or blue asbestos, chrysotile being by far the most important and most widely used. Three other varieties, namely fibrous actinolite, fibrous tremolite, and anthophyllite, have only a limited field of usefulness.

"The asbestos produced in Canada is practically all of the chrysotile variety and comes almost entirely from areas of serpentinized rock in the Eastern Townships, Quebec, where the producing centres are Thetford Mines, Black Lake, East Broughton, Vimy Ridge, Asbestos and St. Remi de Tingwick. The Canadian deposits are the largest known in the world.

"Small deposits of chrysotile asbestos are known in other parts of Quebec and also in Ontario and British Columbia, and several of them have been worked from time to time. The asbestos from some of these deposits has a very low content of iron and is entirely free from magnesite, and should be suitable for use in making insulation for electrical machinery.

"No amosite or crocidolite has been found in Canada, but there are numerous deposits of fibrous tremolite, fibrous actinolite, and anthophyllite, which varieties are commercially termed amphibole asbestos. The fibres of these varieties are harsher and weaker than those of chrysotile and there is little demand for them at present. None of these deposits is being worked, although formerly fibrous actinolite was quarried near the village of Actinolite, Hastings County, Ontario, for use in the making of roofing materials. Asbestos deposits reported as having been found in recent years in Manitoba and in northern and western Ontario are of the amphibole varieties. The amphibole fibres are too harsh and brittle to be spun, but they have a higher resistance to acids than has chrysotile, and it is possible that material from some of the deposits is suitable for use in acid filters and for other purposes where long harsh fibres are required.

"Production has been continuous from the Thetford area since 1878 and reserves of asbestos-bearing rock are huge. Core-drilling to depths greater than 1,700 feet has revealed the presence of fibre comparable in quantity and quality with that in the present workings. Most of the output consists of vein fibre obtained from veins $\frac{1}{4}$ to $\frac{1}{2}$ inch in width, though veins exceeding 5 inches in width occur. The fibres run crosswise of the vein and thus the width of the vein determines the length of fibre. Slip fibre, occurring in fault planes, is obtained largely in the East Broughton area.

"The asbestos-bearing rock is mined in open pits and underground. The block-caving method of underground mining is coming into general use. This method was put into operation at the King mine of Asbestos Corporation in 1934. Johnson's Company is now using the same method, and Bell Asbestos Mines and Canadian Johns-Manville are sinking shafts preparatory to recovering rock by block-caving operations.

"Asbestos is used for a great variety of purposes, the principal products being: cloth, brake linings, clutch facings, packings, insulation, mill-board, siding, shingles, roofing, tile, and pipes."

Table 251.—Principal Statistics of the Asbestos Mining Industry in Canada, 1943-1945

	1943	1944	1945
Number of firms.....	9	9	11
Capital employed..... \$	20,831,427	(d) 354	(d) 429
Number of employees—On salaries (c).....	3,499	3,696	3,808
On wages.....			
Total.....	3,844	4,050	4,237
Salaries and wages—Salaries..... \$	772,455	805,330	820,164
Wages..... \$	4,804,279	5,595,855	5,859,721
Total..... \$	5,576,734	6,401,185	6,679,885
Selling value of products (a)..... \$	24,409,416	21,836,376	24,092,799
Cost of fuel and electricity (purchased)..... \$	1,625,450	1,635,829	1,684,017
Cost of process supplies (b)..... \$	1,651,260	1,166,909	1,267,960
Cost of containers..... \$	1,233,166	1,213,321	1,283,748
Net value of sales..... \$	19,899,540	17,820,317	19,857,074

(a) Includes value of sand and gravel.

(b) Explosives, drill steel, etc.

(c) In 1945 includes 118 females, 87 in 1944, and 91 in 1943.

(d) Not recorded in 1944 or 1945.

Table 252.—Sales and Shipments of Asbestos, 1927-1945

Year	Tons	\$	Year	Tons	\$
1927.....	274,778	10,621,013	1937.....	410,026	14,505,791
1928.....	273,033	11,238,360	1938.....	289,793	12,890,195
1929.....	306,055	13,172,581	1939.....	364,472	15,859,212
1930.....	242,114	8,390,163	1940.....	346,805	15,619,865
1931.....	164,296	4,812,886	1941.....	477,846	21,468,840
1932.....	122,977	3,039,721	1942.....	439,459	22,663,283
1933.....	158,367	5,211,177	1943.....	467,196	23,169,505
1934.....	155,980	4,936,326	1944.....	419,265	20,619,516
1935.....	210,467	7,054,614	1945.....	466,896	22,805,157
1936.....	301,287	9,958,183			

Table 253.—Shipments of Asbestos, by Grades, 1943-1945

	1943		1944		1945	
	Tons	\$	Tons	\$	Tons	\$
Crudes.....	2,016	888,099	1,547	621,956	981	415,203
Fibres.....	217,889	16,071,843	190,233	14,305,966	219,767	16,628,467
Shorts.....	247,291	6,209,563	227,485	5,691,594	246,148	5,761,487
Total.....	467,196	23,169,505	419,265	20,619,516	466,896	22,805,157
Sand, gravel and stone (waste rock only) (*).	6,914	6,745	4,521	3,539	5,109	3,894

(*) This production is included under the Sand and Gravel Industry.

Table 254.—Tonnage of Asbestos Rock Mined and Milled, 1943-1945

	1943	1944	1945
	tons	tons	tons
Rock mined.....	7,929,471	7,778,805	8,765,370
Rock milled.....	6,828,532	6,587,740	6,459,813

Table 255.—Production of Asbestos, by Months, 1945

Month	Short tons	Month	Short tons
January.....	31,653	August.....	41,054
February.....	37,760	September.....	38,910
March.....	50,443	October.....	35,666
April.....	43,310	November.....	36,593
May.....	41,757	December.....	32,732
June.....	39,465	Total.....	466,896
July.....	37,553		

Table 256.—Taxes Paid by the Asbestos Mining Industry, 1944 and 1945

	1944	1945
	\$	\$
Dominion Income Tax, including tax on non-operating revenue.....	2,205,452	1,361,816
Dominion Excess Profits Tax.....	1,108,470	1,602,577
Provincial Taxes—		
Mining taxes paid on net profits from production, including portion paid to municipality....	453,440	288,303
Corporation Income Tax where levied in addition to Mining Tax.....		
Taxes paid on capital and places of business.....	40	2,557
Acreage Taxes.....	348	372
Total Provincial.....	453,828	291,232
Municipal Taxes—		
Based on property valuation.....	182,581	198,270
Based on non-operating revenue.....		
Total Municipal.....	182,581	198,270
Grand Total Taxes Paid.....	3,950,331	3,453,895

Table 257.—Wage-Earners, by Months, 1944 and 1945

Month	Mine			Mill	
	Surface		Underground	Male	Female
	Male	Female	Male		
1944					
January.....	1,403	36	535	1,714	2
February.....	1,370	37	536	1,700	2
March.....	1,358	35	545	1,722	2
April.....	1,355	35	527	1,732	2
May.....	1,417	37	526	1,728	2
June.....	1,462	31	489	1,728	2
July.....	1,488	36	472	1,709	2
August.....	1,507	40	473	1,716	2
September.....	1,457	40	452	1,721	2
October.....	1,473	23	480	1,731	2
November.....	1,544	32	501	1,730	2
December.....	1,407	31	496	1,701	2
Average.....	1,438	34	503	1,719	2

Table 257.—Wage-Earners by Months, 1944 and 1945—Concluded

Month	Mine			Mill	
	Surface		Underground	Male	Female
	Male	Female	Male		
1945					
January.....	1,550	32	447	1,696	2
February.....	1,538	31	465	1,671	2
March.....	1,528	30	468	1,675	2
April.....	1,525	29	471	1,666	2
May.....	1,558	32	459	1,687	2
June.....	1,585	31	442	1,666	2
July.....	1,670	34	450	1,684	2
August.....	1,704	25	440	1,690	2
September.....	1,709	33	486	1,670	2
October.....	1,754	30	484	1,685	2
November.....	1,803	27	456	1,721	2
December.....	1,759	28	420	1,682	2
Average.....	1,643	31	457	1,675	2

Table 258.—Specified Miscellaneous Expenditures by the Asbestos Mining Industry, 1943-1945

	1943	1944	1945
	\$	\$	\$
Workmen's compensation.....	292,970	305,290	384,536
Unemployment insurance.....	63,629	63,917	51,254
Aggregate cost of all supplies purchased.....	3,420,456	3,271,141	4,076,750
Aggregate cost of plant and equipment purchased.....	300,738	294,889	934,294
Cost of buildings, machinery and equipment erected or installed during the year.....	(*)	553,273	1,361,763

(*) Data not recorded.

Table 259.—Imports into Canada and Exports of Asbestos and Asbestos Products, 1944 and 1945

	1944		1945	
	Tons	\$	Tons	\$
IMPORTS				
Asbestos clutch facings for automobiles, motor vehicles and chassis....	xxxx	350,779		316,461
Asbestos brake linings for automobiles, motor vehicles and chassis....	xxxx	523,171		379,038
Asbestos brake linings and clutch facings, n.o.p.....	xxxx	39,919		32,005
Asbestos in any form other than crude, and all manufactures of, n.o.p..	xxxx	963,387		1,385,224
Asbestos packing.....	112	100,260	108	101,615
Total.....	xxxx	1,977,516		2,214,343
EXPORTS				
Asbestos (crude).....	1,541	649,564	863	366,563
Asbestos milled fibres.....	181,668	13,634,772	209,765	15,857,555
Asbestos waste, refuse and shorts.....	212,728	5,361,358	229,929	5,618,124
Asbestos manufactures, including asbestos roofing.....	xxxx	184,180		341,648
Total.....	xxxx	19,829,883		22,183,890

Table 260.—Consumption of Asbestos in Specified Canadian Industries, 1944 and 1945

Industry	1944		1945	
	Quantity	Cost at works	Quantity	Cost at works
		\$		\$
Boilers, tanks and engines.....	(*)	51,485	(*)	21,399
Asbestos Products—				
Fibre..... ton	10,748	499,610	13,108	554,649
Other forms..... ton	494	226,325	882	382,974
Roofing paper..... ton	865	23,152	979	27,635
Cotton goods, n.e.s..... pound	4,425	247	10,646	596
Total.....		749,334		987,253

(*) Not available.

THE FELDSPAR AND QUARTZ MINING INDUSTRY

Owing to the very close physical association of these minerals in many Canadian deposits (pegmatites), it has been found difficult for some operators to make a separation of all data pertaining to the mining of each individual mineral and, for this reason, the general statistics relating to capital, employment, fuel and electricity, etc., have been combined in this report. Since 1936, corresponding statistics relating to the production of nepheline syenite have been included with those pertaining to the commercial production of feldspar and quartz.

Production in 1945, as measured by the sales of feldspar, nepheline syenite and quartz, was valued at \$2,093,880, which was slightly less than the corresponding total of \$2,104,030 for 1944. Feldspar production came entirely from Ontario and Quebec; all of the nepheline syenite came from deposits in Ontario, and quartz (silica) in various forms was produced in Nova Scotia, Quebec, Ontario and Saskatchewan.

In 1945 there were 31 active firms in the industry, but only 27 of these properties made shipments during the year. The industry employed 483 persons to whom \$767,517 was paid in salaries and wages. The cost of fuel, electricity, process supplies, containers and freight amounted to \$467,290 which, if deducted from the gross output value, yields a net value of \$1,626,590 compared with \$1,636,093 in 1944.

Table 261.—Principal Statistics of the Feldspar and Quartz Mining Industry(*), 1939-1945

Year	Number of shipping mines	Average number of employees	Total salaries and wages	Cost of purchased fuel and electricity at works	Cost of process supplies	Gross value of shipments f.o.b. works
			\$	\$	\$	\$
1939.....	38	338	330,170	79,114	99,607	1,352,671
1940.....	41	400	377,254	76,134	138,383	1,508,999
1941.....	35	506	610,480	91,165	159,818	1,838,054
1942.....	34	553	782,903	124,100	287,928	1,998,996
1943.....	34	535	768,199	134,247	322,605	2,138,229
1944.....	41	529	772,385	166,501	241,400	2,104,030
1945.....	27	483	767,517	180,799	220,873	2,093,880

(*) Includes nepheline syenite.

Table 262.—Principal Statistics of the Feldspar and Quartz Mining Industry, 1944 and 1945

	Quebec		Other Provinces (b)(c)	
	1944	1945	1944	1945
Number of active firms (a).....	19	13	22	18
Number of shipping mines.....	19	12	22	15
Number of employees—On salary.....	26	36	34	39
On wages.....	238	231	231	165
Total.....	264	267	265	204
Salaries and wages—Salaries..... \$	36,518	62,064	61,742	65,012
Wages..... \$	339,396	340,843	334,729	299,598
Total..... \$	375,914	402,907	396,471	364,610
Selling value of products (gross)..... \$	816,700	873,321	1,287,330	1,220,559
Cost of fuel and purchased electricity..... \$	87,814	91,166	78,687	89,633
Cost of process supplies, freight and containers..... \$	118,775	106,855	182,661	179,636
Net value of sales..... \$	610,111	675,300	1,025,982	951,290

(a) Small shippers whose production is recorded from consumers' returns are sometimes not included in the total.

(b) Includes data relating to nepheline syenite.

(c) In 1944 includes 2 firms in Nova Scotia, 17 in Ontario, 2 in British Columbia and 1 in Saskatchewan, and in 1945 includes 2 in Nova Scotia and 1 in Saskatchewan.

Table 263.—Number of Wage-Earners on Payroll, by Months, 1945

Month	Quebec			Ontario					Canada Total (*)
	Surface	Under- ground	Mill	Surface		Under- ground	Mill		
	Male	Male	Male	Male	Female	Male	Male	Female	
January.....	100		122	70	1		35		339
February.....	97		129	69	1		37		344
March.....	85		121	111	2		33		362
April.....	95		121	157	1		30		414
May.....	106		103	149	2	20	36		428
June.....	109		108	149	2	22	40		445
July.....	112		108	142	2	19	39		436
August.....	120		109	150	2	20	42		456
September.....	147		107	134	2	19	48		469
October.....	148		126	129	2	11	44		473
November.....	133		125	90			34		394
December.....	104		124	80			31		349

(*) Includes a few employees in Nova Scotia in some months.

FELDSPAR

Production of feldspar, crude and ground, during 1945 was 30,246 tons valued at \$282,656 compared with 23,509 short tons worth \$227,632 in 1944. Quebec produced the major portion, namely, 26,389 tons worth \$247,242. Most of the feldspar mined in Canada is of the high-potash type.

Exports of feldspar from Canada totalled 16,888 tons at \$125,028 in 1945 and imports of ground feldspar amounted to 826 tons at \$15,052.

The consumption of ground feldspar in Canada amounted to 12,944 tons in 1945, including 4,847 tons for scouring powders, 2,740 for glass, 2,347 for pottery and other clay products, 2,684 tons for enamelling and 326 tons for other purposes.

Table 264.—Production of Feldspar, Crude and Ground, in Canada, by Provinces, 1930-1945

Year	Quebec		Ontario		Manitoba	
	Tons	\$	Tons	\$	Tons	\$
1930.....	17,074	163,802	9,722	104,667		
1931.....	10,381	86,842	7,962	100,119		
1932.....	3,390	39,063	3,657	42,920		
1933.....	6,183	59,283	4,387	45,350	88	484
1934.....	9,207	78,853	7,302	61,665	1,793	6,763
1935.....	7,002	63,075	8,656	75,003	2,084	6,252
1936.....	8,115	75,703	8,409	70,840	1,322	7,932
1937.....	12,285	105,612	9,061	72,610		
1938.....	5,874	62,878	8,106	65,964	78	451
1939.....	5,399	60,923	7,061	51,056	40	330
1940.....	8,548	89,004	12,907	98,619		
1941.....	14,218	137,160	11,822	107,124		
1942.....	16,802	164,588	5,468	49,353		
1943.....	17,199	176,222	6,659	61,549		
1944.....	17,842	177,271	5,667	50,361		
1945.....	26,389	247,242	3,857	35,414		

Table 265.—Consumption of Ground Feldspar in Canada, 1940-1945

	1940	1941	1942	1943	1944	1945
	Tons	Tons	Tons	Tons	Tons	Tons
(a) By Uses						
Glass.....	350	909	2,880	2,614	2,382	2,740
Scouring powders.....	1,100	5,411	4,344	5,892	4,617	4,847
Abrasives.....	38	40	119	58	75	60
Clay products (pottery, tile, insulators, etc.)	3,707	3,755	3,234	2,947	2,625	2,347
Enamelling.....	1,472	2,030	1,676	1,667	1,372	2,684
Miscellaneous.....					102	266
Total.....	6,667	12,145	12,253	13,178	11,173	12,944
(b) By Provinces						
Quebec.....	1,866	4,763	5,626	7,555	6,388	6,815
Ontario.....	4,662	7,223	6,588	5,210	4,485	5,769
Manitoba.....				166		
Alberta.....	139	159	39	247	300	360
Canada.....	6,667	12,145	12,253	13,178	11,173	12,944

Table 266.—Imports into Canada and Exports of Feldspar, 1944 and 1945

	1944		1945	
	Tons	\$	Tons	\$
IMPORTS—				
Crude feldspar.....				
Ground feldspar.....	546	10,658	826	15,052
EXPORTS—				
Feldspar.....	13,081	102,918	16,888	125,028

NEPHELINE SYENITE

The American Nepheline Corporation Ltd. at Lakefield, Ontario, was the only producer of nepheline syenite in 1945. Shipments were valued at \$275,766 compared with \$217,989 in 1944. Exports in 1945 totalled 48,351 tons at \$153,311 compared with 35,310 tons at \$123,905 in 1944. All of the exports went to the United States.

Consumption of ground nepheline syenite in Canada amounted to about 8,102 tons in 1945, including 7,778 tons in the glass industry and 324 tons in the pottery industry.

Table 267.—Production(*) of Nepheline Syenite in Canada, 1936-1945

Year	Value	Year	Value
	\$		\$
1936.....	37,426	1941.....	227,583
1937.....	121,481	1942.....	246,893
1938.....	142,737	1943.....	292,010
1939.....	140,148	1944.....	217,989
1940.....	117,849	1945.....	275,766

(*) Only one or two producers in recent years; quantity not available for publication.

Table 268.—Consumption of Ground Nepheline Syenite in Canada, 1942-1945

	1942	1943	1944	1945
	Tons	Tons	Tons	Tons
(a) BY USES				
Glass.....	6,145	5,630	7,285	7,778
Pottery.....			257	324
Total.....	6,145	5,630	7,542	8,102
(b) BY PROVINCES				
Quebec.....	2,031	1,268	1,498	1,570
Ontario.....	4,001	4,133	5,107	4,991
Alberta.....	113	229	937	1,541
Total.....	6,145	5,630	7,542	8,102

QUARTZ (SILICA)

Production of quartz or natural silica during the year under review was 1,513,628 short tons valued at \$1,535,458 compared with 1,740,262 tons at \$1,658,409 in 1944. Output includes crude and crushed dyke quartz, quartzite, sandstone and natural silica sands and gravels. The mineral in one or more of the forms thus defined was produced during 1945 in Nova Scotia, Quebec, Ontario and Saskatchewan. Shipments of silica in Nova Scotia were made to steel plants largely for the making of silica brick. In Quebec, high-grade silica sands were produced for the manufacture of glass and chemicals while a considerable tonnage of these same sands was sold for sand-blasting, moulding and various other purposes; in the same province relatively large quantities of crushed quartzite were mined and milled for the manufacture of silicon carbide and other

products. The greater part of the tonnage of silica shipped in Ontario during 1945 represented material intended for use in the production of silica brick, cement and ferro-silicon and for the fluxing of nickel-copper ores. Quartz production as recorded for Saskatchewan represented low-grade natural silica sands or gravels shipped as flux to the Flin Flon smelter of the Hudson Bay Mining and Smelting Co. Ltd.

Table 269.—Production(*) of Quartz (Silica) in Canada, 1930-1945

Year	Ton	\$	Year	Ton	\$
1930.....	226,200	413,127	1938.....	1,380,011	961,617
1931.....	195,724	303,158	1939.....	1,582,935	1,100,214
1932.....	189,132	276,147	1940.....	1,858,302	1,203,527
1933.....	185,783	297,820	1941.....	2,052,878	1,366,187
1934.....	272,563	432,265	1942.....	1,738,174	1,538,162
1935.....	233,002	424,882	1943.....	1,776,749	1,608,448
1936.....	1,046,649	597,781	1944.....	1,740,262	1,658,409
1937.....	1,377,448	1,129,011	1945.....	1,513,628	1,535,458

(*)Complete data for production of this material in Ontario previous to 1936 are not available.

Table 270.—Production of Quartz, by Provinces, 1944 and 1945

	1944		1945	
	Short tons	Value	Short tons	Value
		\$		\$
PRODUCTION (SHIPMENTS) (*)—				
Nova Scotia.....	10,100	27,350	10,734	36,171
Quebec.....	236,091	639,429	195,857	626,079
Ontario.....	1,326,288	868,389	1,165,238	820,664
Saskatchewan.....	143,101	50,085	141,799	52,544
British Columbia.....	24,682	73,156		
Canada.....	1,740,262	1,658,409	1,513,628	1,535,458

(*) Includes both crude and crushed quartz, crushed sandstone and quartzite, and natural silica sands.

Table 271.—Production (a) of Natural Low-Grade Silica Sand and Silica Gravel as Non-Ferrous Smelter Flux, 1943-1945

	1943		1944		1945	
	Tons	\$	Tons	\$	Tons	\$
Ontario.....	(b) 666,452	233,258	(b) 608,403	212,840	523,558	183,245
Saskatchewan.....	163,102	57,086	143,101	50,085	141,799	52,544
Canada.....	829,554	290,344	751,504	262,925	665,357	235,789

(a) Included in totals shown in Tables 12 and 13.

(b) Exclusive of low-cost quartzite used in smelting nickel-copper ores.

Table 272.—Imports into Canada and Exports of Silica, 1944 and 1945

	1944		1945	
	Quantity	\$	Quantity	\$
	Tons		Tons	
IMPORTS—				
Ground flint stone.....	1,481	30,487	712	20,550
Canister.....	346	2,463	426	3,384
Silica sand for manufacturing.....	457,602	914,390	410,427	926,648
Silex or crystallized quartz.....	8,774	530,200	7,251	247,393
Silica fire brick.....		713,538		741,394
EXPORTS—				
Quartzite.....	126,608	260,181	121,435	282,578

Table 273.—Consumption of Silica Sand and Ground Quartz in Canada, by Industries and by Provinces, 1941-1944

	1941	1942	1943	1944
(Tons of 2,000 pounds)				
(a) BY INDUSTRIES				
Steel foundries.....	91,192	134,724	129,881	89,807
Iron foundries.....	13,255	9,146	15,104	7,498
Ferro-alloys.....	2,347	4,338	4,535	6,481
Enamelling.....	1,447	632	1,071	394
Brass foundries.....	1,094	1,874	3,237	2,514
White metal foundries.....	178	42	12	41
Smelters.....	644	321	3,774	191
Electrical apparatus.....	1,150	329	681	.....
Glass.....	114,761	145,005	132,992	131,987
Artificial abrasives and abrasive products.....	57,362	76,943	89,022	73,771
Products from imported clays.....	3,467	3,036	2,773	3,441
Monumental and ornamental stone.....	2,035	1,385	980	759
Prepared foundry supplies.....	602	1,082	126	169
Cement mills.....	16,110	20,711	19,473	23,942
Refractories.....	1,635	1,642	1,365	1,023
Roofing paper.....	2,641	2,879	2,135	4,307
Chemicals.....	16,397	15,296	17,305	19,708
Fertilizers.....	not available	15,848	37,988	20,715
Paints.....	1,019	1,310	1,239	1,767
Soaps and washing compounds.....	628	180	246	4,545
Cleaning preparations.....	3,719	2,282	3,004	58
Matches.....	269	333	334	349
Miscellaneous.....	308	402	236	74
Total.....	332,260	439,740	467,513	393,541
(b) BY PROVINCES				
Prince Edward Island.....	.....	309	335	.....
Nova Scotia.....	3,395	4,836	2,364	1,087
New Brunswick.....	296	3,996	6,810	705
Quebec.....	155,950	207,244	210,909	204,970
Ontario.....	146,828	190,465	210,875	153,871
Manitoba.....	10,042	12,635	11,989	11,168
Saskatchewan.....	39	35	59	72
Alberta.....	12,202	14,777	16,205	16,947
British Columbia.....	3,508	5,443	7,967	4,721
Canada.....	332,260	439,740	467,513	393,541

THE GYPSUM INDUSTRY

(1) Primary Production—The Gypsum Mining and Quarrying Industry

Shipments of gypsum from Canadian mines and quarries in 1945 totalled 839,781 tons valued at \$1,783,290. In the previous year, the shipments amounted to 596,164 tons worth \$1,511,978. The tonnage in each year is made up of various grades of crude gypsum or crude anhydrite as shipped from the quarries or mines, together with the calcined gypsum used in, or shipped from, the quarries or "Primary" plants.

The quantity of crude mineral mined in 1945 included 803,761 tons of crude gypsum and 26,962 tons of crude anhydrite. The quantity of crude gypsum calcined at the quarries or mines in 1945 amounted to 210,276 tons.

Some of the Canadian gypsum mining companies restrict their operations in the Dominion to the production and sale of crude gypsum or anhydrite while others, in addition to marketing various grades of crude gypsum, produce a calcine for sale or for consumption in their own manufacturing plants in making wallboard, wall plaster, etc.

In 1945 the gypsum mining industry operated 12 quarries or mines and paid 434 employees a total of \$647,287 in salaries and wages. The cost of fuel, electricity and process supplies was \$575,645, and the net value of production was \$1,207,645.

Exports in 1945 included 558,632 tons of crude gypsum valued at \$581,625 and 447 tons of plaster of Paris or wall plaster worth \$9,058. Imports included 888 tons of gypsum worth \$22,183 and 2,884 tons of plaster of Paris and wall plaster valued at \$89,144.

Table 274.—Principal Statistics for the Gypsum Mining Industry, 1939-1946

Year	Number of firms	Number of plants	Average number of employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies	Gross selling value of products f.o.b. works
				\$	\$	\$	\$
1939.....	10	17	714	692,158	193,488	105,831	1,935,127
1940.....	9	16	694	717,666	194,964	223,375	2,065,933
1941.....	8	15	648	745,008	222,564	229,444	2,248,428
1942.....	7	13	510	657,620	178,682	65,457	1,254,182
1943.....	6	12	438	617,780	201,980	46,063	1,381,468
1944.....	8	12	328	490,872	148,743	239,198	1,511,978
1945.....	7	12	434	647,287	184,619	391,026	1,783,290

Table 275.—Production of Crude and Calcined Gypsum in Canada, by Months, 1944 and 1945

Month	1944	1945	Month	1944	1945
	Tons	Tons		Tons	Tons
January.....	44,157	12,936	July.....	66,660	82,479
February.....	44,704	12,901	August.....	80,437	99,012
March.....	49,168	16,508	September.....	57,804	132,380
April.....	38,839	24,776	October.....	50,047	150,756
May.....	41,547	43,759	November.....	39,965	110,025
June.....	47,177	103,749	December.....	35,659	50,500

Table 276.—Production (a) of Gypsum in Canada, 1944 and 1945

	1944		1945	
	Quantity	Value	Quantity	Value
	tons	\$	tons	\$
SHIPMENTS BY GRADES—				
Crude (a)—Lump or mine run.....	26,726	38,499	27,063	64,631
Crushed.....	398,142	463,677	638,217	760,042
Fine ground.....	5,508	16,244	424	2,843
Calcined gypsum, sold and used (b).....	165,788	993,558	174,077	955,774
Total.....	596,164	1,511,978	839,781	1,783,290
SHIPMENTS BY PROVINCES—				
Nova Scotia.....	401,284	489,932	634,960	790,273
New Brunswick.....	42,040	200,748	46,755	236,833
Ontario.....	90,288	348,873	92,174	385,516
Manitoba.....	38,330	368,498	42,275	300,636
British Columbia.....	24,222	103,927	23,617	70,032
Total.....	596,164	1,511,978	839,781	1,783,290
Total gypsum mined and quarried (c).....	536,356		830,723	
Total gypsum calcined (b).....	194,748		210,276	

(a) "Production" means Producers' Shipments of crude gypsum plus calcined gypsum shipped or used at mine.
 (b) Does not include gypsum calcined in manufacturing plants located in Montreal and Calgary, but includes calcine used in manufacturing plants operated in direct or close conjunction with the mines—the value of calcine used is its value as a process material.
 (c) Includes some anhydrite quarried in Nova Scotia.

Table 277.—Employees, Salaries and Wages, by Provinces, 1944 and 1945

Province	Average number of employees					Salaries	Wages	Total salaries and wages
	On salaries		On wages		Total			
	Male	Female	Male	Female				
	No.	No.	No.	No.	No.	\$	\$	\$
1944								
Nova Scotia.....	16	6	122		144	46,783	167,603	214,386
Other provinces.....	14		169	1	184	34,962	241,524	276,486
Canada.....	30	6	291	1	328	81,745	409,127	490,872
1945								
Nova Scotia.....	18	6	155	1	180	35,345	225,686	261,031
Other provinces.....	13		240	1	254	32,543	353,713	386,256
Canada.....	31	6	395	2	434	67,888	579,399	647,287

Table 278.—Number of Wage-Earners on Payroll or Time Record on the Last Day of Each Month, 1943-1945

Month	1943		1944		1945				
	Mine	Mill	Mine	Mill	Mine			Mill	
					Surface		Under-ground (*)	Male	Female
					Male	Female			
January.....	152	151	150	73	61	1	78	139	.....
February.....	162	147	149	68	55	1	76	121	.....
March.....	166	157	161	86	67	2	81	137	.....
April.....	177	152	188	92	107	2	79	144	.....
May.....	181	165	212	100	124	2	91	160	.....
June.....	197	170	211	110	184	2	87	161	.....
July.....	217	182	209	108	185	2	87	175	.....
August.....	244	179	220	113	178	2	89	189	.....
September.....	236	199	233	128	202	2	91	193	.....
October.....	236	198	232	118	177	2	87	198	.....
November.....	259	199	181	108	199	2	98	215	.....
December.....	268	190	163	82	146	2	89	152	.....
Average.....	211	176	193	99	142	2	88	165	.....

(*) Underground work only in New Brunswick, Ontario and Manitoba.

Table 279.—Imports and Exports of Gypsum, 1944 and 1945 (*)

	1944		1945	
	Quantity	Value	Quantity	Value
	Tons	\$	Tons	\$
IMPORTS—				
Gypsum, crude (sulphate of lime).....	560	17,223	888	22,183
Gypsum, ground, not calcined.....				
Plaster of Paris and wall plaster.....	1,550	65,180	2,884	89,144
Total.....		82,403		111,327
EXPORTS—				
Gypsum or plaster, crude.....	386,949	434,123	558,632	581,625
Plaster of Paris, wall plaster.....	443	9,262	447	9,058
Gypsum, ground.....				
Total.....		443,385		590,683

(*) Subject to revision.

Table 280.—Consumption of Gypsum in the Portland Cement Industry in Canada, 1939-1945

Year	Tons
1939.....	31,492
1940.....	38,903
1941.....	49,031
1942.....	49,816
1943.....	47,034
1944.....	42,672
1945.....	45,883

Table 281.—Consumption of Gypsum in the Gypsum Products Industry, 1939-1945

Year	Crude	Calcined
	Tons	Tons
1939.....	19,946	105,397
1940.....	21,611	125,917
1941.....	30,978	157,488
1942.....	20,742	149,885
1943.....	17,489	162,273
1944.....	26,683	165,750
1945.....	10,147	194,351

(2) Secondary Production—The Gypsum Products Industry

Nine Canadian factories, operated by 4 companies, manufactured gypsum products having a factory selling value of \$5,716,114 during 1945. This output was 12.6 per cent over the 1944 total of \$5,077,477. The main products were gypsum wallboard, gypsum hardwall plaster, gypsum lath, gypsum tile and gypsum blocks.

The average number of employees in these works in 1945 was 603, to whom \$937,369 were paid in salaries and wages. Expenditures for fuel and electricity amounted to \$289,914 and materials used in manufacturing processes cost \$2,843,004.

Table 282.—Principal Statistics of the Gypsum Products Industry, 1944 and 1945

	1944	1945
Number of establishments.....	9	9
Number of employees.....	569	603
Salaries and wages.....	\$ 856,261	937,369
Cost of fuel and electricity.....	\$ 297,606	289,914
Cost of materials at works.....	\$ 2,659,683	2,843,004
Selling value of products at works.....	\$ 5,077,477	5,716,114

NOTE: Profits or losses cannot be calculated from above figures as data are not available for general expense items, such as interest, rent, depreciation, taxes, insurance, advertising, etc.

Table 283.—Employees, Salaries and Wages, 1944 and 1945

	1944	1945
Employees—On salaries—Male.....	No. 50	58
Female.....	No. 18	17
On wages—Male.....	No. 462	474
Female.....	No. 39	54
Total Employees.....	No. 569	603
Salaries.....	\$ 134,424	157,769
Wages.....	\$ 721,837	779,600
Total Salaries and Wages.....	\$ 856,261	937,369

Table 284.—Materials Used in the Gypsum Products Industry, 1944 and 1945

Material	Unit of measure	1944		1945	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Gypsum, crude.....	ton	26,683	212,813	10,147	80,298
Gypsum, calcined (plaster of Paris).....	ton	165,750	993,385	194,351	1,143,123
Paper.....	ton	15,089	990,201	15,488	1,038,137
Starch or paste.....	ton	678	50,391	810	65,485
Hair.....	ton	66	17,468	83	21,188
Retarder.....	ton	224	19,374	256	22,469
Sawdust and shavings.....	ton	246	3,105	283	3,084
Containers, etc.....			101,244		131,894
All other materials.....			262,702		337,326
Total.....			2,659,683		2,843,004

Table 285.—Output of the Gypsum Products Industry, 1944 and 1945

Product	Unit of measure	1944		1945	
		Quantity	Selling value at works	Quantity	Selling value at works
			\$		\$
Gypsum wallboard.....	sq. ft.	179,239,550	3,814,067	133,977,115	3,405,323
Gypsum hard wall plasters.....	ton	65,580	864,115	67,076	875,529
All other products (*).....			399,295		1,435,262
Total.....			5,077,477		5,716,114

(*) Includes gypsum tile and blocks, gypsum lath, etc.

THE IRON OXIDES (OCHRE) INDUSTRY, 1945

Sales by Canadian producers of ochreous iron oxides during 1945 totalled 10,314 short tons valued at \$172 053, compared with 8,599 tons worth \$150,250 in 1944. These figures include the mineral in both the crude and the refined state. Production from Quebec amounted to 9,917 tons worth \$170,068, and the remainder came from a deposit in British Columbia.

There were 51 employees working for the 5 firms which operated in 1945, and payrolls for the year amounted to \$58,011. Process supplies cost \$5,900 and \$15,851 were spent for fuel and electricity. Operations in the industry are seasonal, starting the latter part of April and closing in December.

The following information relating to ochreous oxides in Canada is taken from a report prepared by the Bureau of Mines, Ottawa:

"Ochreous iron oxide, which is sold uncalcined and is used chiefly in the purification of illuminating gas, comprises the bulk of the minerals produced under this category. The calcined form of ochreous iron oxide is used in the manufacture of paints. A smaller quantity of natural iron oxides associated with clay-like materials in the form of umbers and siennas is produced in the raw and in the calcined state for use as pigments in paints. The Canadian iron oxide industry is small and the quantity produced shows little change from year to year. Present producing localities have met the requirements of the domestic pigment trade for the cheaper grades for many years.

"In Quebec, Sherwin-Williams Company of Canada operated its deposits and plants at Red Mill, Champlain county, a few miles east of Trois Rivières. It is the only Canadian producer of calcined iron oxides; the others market only air-dried products. Its calcined and air-floated mineral products are produced to rigid specifications. This plant produces most of the Canadian iron oxide and was operated at capacity throughout 1945. Several small deposits are worked intermittently at Almaville, St. Louis, and St. Adelphe in Champlain county, and at Les Forges, and near Pointe-du-Lac, St. Maurice county. In the past, deposits in Quebec were operated near Ste. Anne de Beaupre, Montmorency county; in Lynch township, Labelle county; and at St. Raymond, Portneuf county."

"In Alberta and Saskatchewan, several deposits of ochre are known, some of which have commercial possibilities, but they are difficult of access and the market is limited and they have received little active attention. The most promising known deposit in Saskatchewan is located at Loon Lake, 32 miles from St. Walburg (station on C.N.R. line) and 77 miles northwest of North Battleford. Large deposits near Grand Rapids and Cedar Lake in northern Manitoba remain undeveloped for similar reasons.

"In British Columbia, there has been a small production since 1923 of iron oxide from Alta Lake, New Westminster district, and from oxide beds in the Windermere district. The oxide is used chiefly for gas purification."

Table 286.—Principal Statistics of the Natural Iron Oxides Industry in Canada, 1943-1945

	1943	1944	1945
Number of firms.....	(d) 5	(d) 6	(d) 5
Capital employed..... \$	254,891	(a)	(a)
Number of employees—On salaries.....	(b) 7	(c) 8	(b) 8
On wages.....	40	47	43
Total.....	47	55	51
Salaries and wages—Salaries..... \$	10,293	11,416	13,382
Wages..... \$	36,261	38,460	44,629
Total..... \$	46,554	49,876	58,011
Selling value of products (gross)..... \$	135,893	150,250	172,053
Cost of fuel and purchased electricity..... \$	19,438	19,115	15,851
Cost of process supplies..... \$	7,590	6,700	5,900
Freight..... \$		11,670	13,650
Selling value of products (net)..... \$	108,865	112,765	136,652

(a) Not recorded. (b) Includes three female employees.

(c) Includes four female employees.

(d) Four producers in Quebec and one in British Columbia.

Table 287.—Production of Natural Iron Oxides in Canada, 1927-1945

Year	Quantity	Value	Year	Quantity	Value
	Short tons	\$		Short tons	\$
1927.....	6,125	103,536	1937.....	6,197	83,640
1928.....	5,414	111,198	1938.....	5,821	71,769
1929.....	6,518	115,932	1939.....	6,015	88,418
1930.....	6,596	83,873	1940.....	9,979	111,874
1931.....	5,520	49,205	1941.....	10,045	142,099
1932.....	5,240	46,161	1942.....	9,304	151,653
1933.....	4,357	53,450	1943.....	8,401	135,893
1934.....	4,959	66,166	1944.....	8,599	150,250
1935.....	5,516	77,075	1945.....	10,314	172,053
1936.....	5,854	69,630			

Production of iron oxides in Canada since 1886 to the end of 1945 amounted to 344,027 tons valued at \$3,731,756.

Table 288.—Wage-Earners(*), by Months, 1944 and 1945

Month	Number				Month	Number			
	1944		1945			1944		1945	
	Mine	Mill	Mine	Mill		Mine	Mill	Mine	Mill
January.....		33		28	July.....	24	30	26	24
February.....		30		27	August.....	30	31	26	29
March.....		35		27	September.....	31	31	27	31
April.....		38	9	31	October.....	23	31	20	32
May.....	13	28	25	25	November.....	12	35	6	34
June.....	18	30	23	27	December.....	9	33	1	38

(*) No underground work; no female wage-earners.

Table 289.—Imports into Canada and Exports of Iron Oxides, 1944 and 1945

	1944		1945	
	Quantity	Value	Quantity	Value
	Tons	\$	Tons	\$
IMPORTS—				
Ochres, ochrey earths, siennas and umbers.....	1,431	70,168	1,900	97,164
Oxides, fireproofs, rough stuff, fillers and colours, dry, n.o.p.....	2,859	1,040,206	3,221	1,238,768
EXPORTS—				
Pigments, n.o.p. (exclusive of white lead).....	627	121,622	6,078	1,012,524
Iron oxides.....	2,026	120,327	2,447	96,490

Table 290.—Consumption of Iron Oxides in Specified Canadian Industries, 1934-1945

Year	Coke and Gas		Paints, Pigments and Varnishes			
			Iron Oxide Pigments		Ochres, Siennas and Umbers	
	Quantity	Value	Quantity	Value	Quantity	Value
	Tons (a)	\$	Tons	\$	Tons	\$
1934.....	3,757	47,010	580	53,539	544	53,236
1935.....	3,701	46,204	990	77,758	564	56,219
1936.....	(b)	41,291	733	67,850	634	65,819
1937.....	(b)	40,414	890	81,709	566	49,082
1938.....	(b)	41,013	822	70,736	487	41,062
1939.....	(b)	35,417	882	80,274	523	46,134
1940.....	5,417	42,491	1,146	112,826	575	62,636
1941.....	5,133	36,480	1,602	187,836	464	58,385
1942.....	4,600	33,790	2,334	253,383	412	52,155
1943.....	6,568	45,946	2,321	222,858	440	68,425
1944.....	9,194	71,545	2,614	242,234	648	69,092
1945.....	7,357	75,441	2,799	310,434	671	71,231

(a) Oxide and purifying materials.

(b) Data not available.

THE MICA MINING INDUSTRY

Canadian production or primary shipments of all grades of mica in 1945 totalled 7,044,221 pounds valued at \$233,270 compared with 6,684,846 pounds worth \$841,026 in 1944, which was the year of peak production. Of the total output in 1945, mines in the province of Quebec contributed 2,856,858 pounds valued at \$121,011 and Ontario deposits 2,903,363 pounds worth \$95,123; the British Columbia mines produced 1,284,000 pounds valued at \$17,136. Muscovite (white mica) produced weighed 1,349,717 pounds worth \$90,735 and the 5,694,504 pounds of phlogopite (amber) was valued at \$142,535.

A direct comparison of tonnage and value of one year cannot be made with that of another year due to wide variation of value in mica due to size and quality. As an example, a comparatively small quantity of large dimension clear crystals would be more valuable than a considerably greater weight of inferior grade material.

Table 291.—Principal Statistics of the Mica Mining Industry in Canada, 1944 and 1945

	1944	1945			
	Canada (*)	Quebec	Ontario	British Columbia	Canada (*)
Number of firms or operators.....	20	28	11	1	40
Number of employees—On salary.....	22	7	9		16
On wages.....	378	103	55		158
Total.....	400	110	64		174
Salaries and wages—Salaries..... \$	39,587	11,499	20,474		31,973
Wages..... \$	320,210	94,220	63,945		158,165
Total..... \$	359,797	105,719	84,419		190,138
Selling value of products (gross)..... \$	841,026	121,011	95,123	17,136	233,270
Cost of fuel and electricity..... \$	23,586	16,259	5,338		21,597
Cost of process supplies used..... \$	33,038	27,987	908		28,895
Selling value of products (net)..... \$	784,402	76,765	88,877		182,778

(*) Does not include general statistics (wages, fuel, electricity and process supplies) for one plant operating in British Columbia.

Table 292.—Mica Production (Primary Sales) in Canada, by Classes, 1944 and 1945

Grade	1944		1945	
	Pounds	Total value f.o.b. ship- ping point	Pounds	Total value f.o.b. ship- ping point
		\$		\$
Rough, mine-run or rifted.....	314,878	22,733	11,910	886
Mica sold for mechanical splitting.....	427,426	62,842	329,476	57,816
Splittings.....	44,350	32,123	4,050	3,865
Ground or powdered.....			1,753,030	36,799
Scrap—Mine or shop waste and mica mined and sold for grinding.....	5,381,779	66,167	4,877,866	30,074
Flake (mica schist)—Natural or recovered by milling.....				
Trimmed mica.....	516,413	657,161	67,869	103,830
Total Mica Shipments.....	6,684,846	841,026	7,044,221	233,270
VARIETIES—Phlogopite mica (amber).....	6,408,900	261,892	5,694,504	142,535
Muscovite mica (white).....	275,946	579,134	1,349,717	90,735
Total Mica Shipments.....	6,684,846	841,026	7,044,221	233,270

Table 293.—Production (Sales) of Mica in Canada, by Provinces and Varieties, 1945

Province	Phlogopite		Muscovite		Total	
	Pounds	\$	Pounds	\$	Pounds	\$
Quebec.....	2,856,858	121,011			2,856,858	121,011
Ontario.....	2,837,646	21,524	65,717	73,599	2,903,363	95,123
British Columbia.....			1,284,000	17,136	1,284,000	17,136
Total Canada.....	5,694,504	142,535	1,349,717	90,735	7,044,221	233,270

Table 294.—Production (*) of Mica in Canada, 1933-1945

Year	Short tons	\$	Year	Short tons	\$
1933.....	944	49,284	1940.....	975	237,145
1934.....	998	97,071	1941.....	1,743	335,288
1935.....	628	82,038	1942.....	3,010	383,567
1936.....	801	74,556	1943.....	4,025	553,856
1937.....	945	133,731	1944.....	3,342	841,026
1938.....	519	80,989	1945.....	3,522	233,270
1939.....	1,068	147,321			

(*) Sales.

The total value of mica produced in Canada from the first official recording of mica statistics in 1886 to the end of 1945 amounted to \$10,425,822.

Table 295.—Imports and Exports of Mica, 1944 and 1945

	1944		1945	
	Pounds	Value	Pounds	Value
		\$		\$
IMPORTS—				
Mica and manufactures of, n.o.p.....		185,986		236,597
Vermiculite, crude.....		21,166		35,496
EXPORTS—				
Mica, scrap and waste.....	4,879,200	36,072	4,853,600	33,200
Mica splittings.....	75,800	56,211	5,200	4,088
Mica manufactures.....		994		2,614
Mica, rough, untrimmed.....	955,600	133,149	801,400	107,740
Mica, trimmed.....	282,100	572,541	67,600	146,026
Mica, ground.....	600,900	18,340	352,000	11,055
Total Mica Exports.....		817,307		304,723

Table 296.—Consumption of Mica in Canada, by Industries, as Reported to the Annual Census of Industry, 1943 and 1944

	1943		1944	
	Quantity	Cost at works	Quantity	Cost at works
	tons	\$	tons	\$
In electrical apparatus industry.....	145	324,919	164	396,978
In rubber industry.....	111	12,314	117	14,011
In roofing (*).....	395	23,160	702	36,260
In mica manufacturing industry.....	36	41,050	45	52,853
Total Accounted for.....		401,443		500,102

(*) Includes mica used in manufacture of wall paper.

Table 297.—Number of Wage-Earners on Payroll or Time Record on the Last Day of Each Month or Nearest Work Day, 1944 and 1945

Month	1944				1945			
	Mine		Shop (*)		Mine		Shop (*)	
	Surface	Under-ground	Male	Female	Surface	Under-ground	Male	Female
January.....	72	55	65	241	64	46	44	84
February.....	(†) 77	63	65	228	47	37	40	33
March.....	(†) 75	70	64	210	44	35	41	30
April.....	(†) 72	75	59	202	45	31	47	30
May.....	(†) 71	64	64	160	38	23	55	21
June.....	73	72	65	155	52	24	64	12
July.....	78	79	65	151	59	19	69	20
August.....	66	74	57	186	52	19	55	14
September.....	64	72	48	179	63	8	42	14
October.....	69	68	41	128	65	13	40	14
November.....	73	63	38	90	48	22	48	14
December.....	76	60	32	79	54	20	48	14

(*) Includes outside workers.

(†) Includes one female.

The following information has been extracted from a report on the Mica Industry by the Bureau of Mines, Ottawa:

"Mica possesses a combination of properties that make it of outstanding value as an insulating material in all forms of electrical equipment and appliances, and almost the entire production of sheet muscovite and phlogopite is used in the electrical industry.

"Most of the phlogopite mined in Canada has come from a belt of pyroxenite rocks that extends from Kingston to Ottawa, in Ontario, and thence northward into Quebec, between the Gatineau and Lievre Rivers. The productive belt is from 60 to 70 miles wide and about 200 miles long. Scattered, outlying mica deposits occur also in Pontiac and Argenteuil counties, Quebec, and as far east as Quebec City; and in Ontario, similar deposits have been mined to the west in Hastings and Haliburton counties.

"In general, Canadian phlogopite deposits tend to be an erratic, impersistent, and pockety character, and this factor makes underground mining difficult and expensive and for the most part precludes any sustained, systematic attempt to develop ore-bodies. Only in comparatively few instances have workings been carried to depths greater than 100 feet, a great part of the production having been derived from a large number of small, scattered, and intermittently operated surface pits. Reserves, however, are probably sufficient to maintain output at present levels for a considerable period.

"The larger producers of phlogopite operate their own mica shops, and sell direct to the trade, but a substantial volume of business is done also by dealers who purchase small lots of mine-run or trimmed block from small operators and grade, trim, or split the material for sale. Most of the splitting work is farmed out in small rural communities and is done on a piecework basis.

"Madagascar, the other chief source of phlogopite, started to produce on an important scale around 1920, and since then has had an annual output of sheet mica about equal to that of Canada. Ceylon, Korea, Tanganyika, and Portuguese East Africa have also furnished small amounts of phlogopite, and a few years ago development of deposits in Mexico was commenced. Recently, the discovery of occurrences in the Northern Territory of Australia was reported.

"Muscovite, the occurrence of which in commercial sheet form is confined to granite pegmatite dykes, is far more widely distributed in Canada than phlogopite, and deposits are known in many sections of Quebec and Ontario, as well as in Manitoba and British Columbia, and in the Baffin Island section of the Eastern Arctic. Spasmodic attempts at development of certain of these occurrences have been made, but it was not until the discovery in 1942 of deposits in the Eau Claire region that serious production of muscovite was undertaken. Following the original discovery of the Eau Claire deposits on what is now the Purdy Company's property, several groups of claims were staked on adjacent ground by various syndicates, but none of these contain encouraging amounts of mica, and the quality, in general, is too low for profitable mining.

"In Quebec, there are deposits of ruby muscovite mica of strategic quality in Petain township, Abitibi county, and in Bergeronnes township, Saguenay county, the production from which has been small.

"Muscovite mica is widely distributed, and many countries produce small quantities. India has long been the chief source of supply, and production there since 1942 has exceeded all previous records. Indian "ruby" muscovite, obtained from Bihar Province, is the world standard for exacting electrical uses, particularly for magneto and radio condenser films. India also supplies green muscovite, which is produced in Madras.

"Vermiculite, a variety of mica which has the unique property of swelling enormously into exceedingly light-weight, accordion-like form when heated, is used extensively for thermal and acoustic insulation. The expanded product, also termed "Zonolite", has a specific gravity of only 6 to 8 pounds per cubic foot, is comparatively refractory, and has low thermal and sound

conductivity. In the form of loose-fill, it is a valuable insulator in the walls and roofs of dwellings, industrial buildings, furnaces, ovens, and refrigerators, in which fields it competes with rock and glass wool. Combined with various bonding materials, it is fabricated into pipe covering, insulating blocks, plasters, tiles, and structural roof slabs, and it is also widely employed as a lightweight aggregate in concrete, including cast slabs for pre-fabricated houses. Such slabs are also being used for the decks, roofs, and fire-walls of ships and buildings subject to bombing attack. Plastic insulation made with vermiculite is used as a heat insulator on the outside of boilers and refinery columns, and as a sound-proofing agent in automobiles and aircraft.

"Of technical interest was the development in 1943 of improved instruments for readily determining the power factor and the electrical conductivity of sheet mica. Appraisal solely by visual means caused the rejection of important amounts of sound mica. The new instruments are, respectively, the direct-reading Q-meter and the point-electrode conductivity tester, both developed by the Bell Telephone Laboratories. They are not intended to supplant visual inspection, but by their use it is expected that important amounts of mica of a quality hitherto rejected on account of appearance will become available for capacitor and other more exacting electrical needs. Instruments of the above type are now available in the Bureau of Mines, Ottawa, for the testing of mica samples."

PEAT INDUSTRY

The Canadian peat industry covers the operations of firms which produce peat for use as fuel and those which produce peat moss and humus for commercial and industrial purposes. During 1945 production of peat fuel amounted to 118 tons valued at \$1,062, compared with 644 tons worth \$5,397 in 1944, the entire output originating in Ontario. Commercial production (shipments) of peat moss during 1945 totalled 83,963 tons valued at \$2,011,139 (excluding cost of containers) compared with an output of 80,446 short tons worth \$1,869,553 in 1944.

Canada has very extensive resources of peat moss and there are large deposits in every province, many of which are within easy reach of transportation facilities. Prior to World War II, however, production was insignificant. The Canadian demand alone was much too small to warrant a large-scale development of the deposits, and for years the United States had been obtaining practically all of its requirements of peat moss, surplus to its own production, from Europe. In the main, Canadian and American users received good service from these European producers from the viewpoint of quality and cost of product, adherence to specifications, and regularity and promptness of shipments. Thus, it would have been difficult under the circumstances to have undertaken the development of the Canadian deposits on a large scale. Shortly after the commencement of war, however, all imports of peat moss from Europe ceased, and this gave rise to the active development of Canadian deposits. Since then, Canada has been supplying its own needs and the greater part of the requirements of the United States that were formerly imported from Europe.

Peat occurs in nature in two distinct forms, unhumified and humified, which differ markedly in physical properties and in chemical composition. Unhumified peat is the dead moss of sphagnum mosses, only slightly humified. It is fibrous, elastic, of light greyish green, or yellowish to light brown colour, becoming somewhat darker on drying. It has an absorptive value of up to twenty-five times its own weight, is light in weight and porous. Humified peat in its natural state is dark brown to black, colloidal, plastic, homogeneous, and somewhat elastic. It dries into a hard solid mass of a specific gravity higher than water. It has almost no absorptive value. Unhumified peat left in its natural state will humify in course of time and all fibrous matter eventually disappears.

Exports from Canada of peat moss and other mosses amounted to 76,409 tons at \$2,625,514 in 1945, practically all to the United States.

Table 298.—Principal Statistics of the Peat Industry in Canada, 1944 and 1945

	1944	1945
Number of firms.....	39	37
Number of plants or bogs.....	39	37
Number of employees—On salary.....	73	85
On wages.....	1,110	1,148
Total.....	1,183	1,233
Salaries and wages—Salaries..... \$	145,653	135,857
Wages..... \$	1,008,356	1,168,392
Total..... \$	1,154,009	1,304,249
Selling value of products (gross)..... \$	2,163,376	2,390,306
Cost of fuel and electricity..... \$	48,423	90,863
Process supplies used..... \$	46,527	47,136
Cost of containers or packing..... \$	288,426	378,105
Selling value of products (net)..... \$	1,780,000	1,874,202

Table 299.—Number of Firms, Employees, Salaries and Wages, and Peat (Moss and Fuel) Sold or Used, by Provinces, 1944 and 1945

Province	Number of firms	Number of employees	Salaries and wages	Fuel, electricity, process supplies used and cost of containers	Production		Value (gross)
					As fuel	Moss	
1944			\$	\$			\$ (†)
Quebec.....	18	282	235,848	118,094	444	19,033	363,321
Ontario.....	6	173	169,017	65,769	200	12,491	146,620
Manitoba (*).....	3	129	90,802	41,320		3,128	105,878
British Columbia.....	12	599	658,342	158,193		45,794	1,259,131
Canada.....	39	1,183	1,154,009	383,376	644	80,446	1,874,950
1945							
Quebec.....	15	313	265,246	122,039		18,517	487,545
Ontario.....	6	161	142,176	60,706	118	11,667	278,534
Manitoba (*).....	4	94	93,557	46,466		3,182	132,203
British Columbia.....	12	665	803,270	286,893		50,597	1,492,024
Canada.....	37	1,233	1,304,249	516,104	118	83,963	2,390,306

(*) Includes 2 firms in New Brunswick.

(†) Includes cost of containers.

Table 300.—Wage-Earners, by Months, 1943-1945

Month	Total		1945			
			Bog		Dressing Plant	
	1943	1944	Male	Female	Male	Female
January.....	737	556	206	1	290	34
February.....	733	567	214	1	258	33
March.....	696	592	226	1	280	22
April.....	582	595	295	16	295	13
May.....	842	1,092	702	55	268	8
June.....	1,275	2,019	1,497	455	293	54
July.....	1,349	2,575	1,563	876	317	62
August.....	1,570	1,906	1,301	374	318	50
September.....	1,212	1,241	614	35	309	20
October.....	838	864	537	22	309	27
November.....	801	708	470	1	342	27
December.....	557	578	259	1	339	28

Table 302.—Peat Fuel Produced in Canada, 1928-1945

Year	Short tons	\$	Year	Short tons	\$
1928.....	1,497	5,845	1937.....	478	2,676
1929.....	2,607	13,339	1938.....	620	3,500
1930.....	2,847	10,932	1939.....	445	2,445
1931.....	1,674	7,033	1940.....	30	75
1932.....	3,248	7,593	1941.....	355	2,155
1933.....	1,131	3,449	1942.....	172	1,204
1934.....	1,878	7,343	1943.....	782	7,000
1935.....	1,340	5,761	1944.....	644	5,397
1936.....	1,341	7,376	1945.....	118	1,062

Table 303.—Production of Peat Moss in Canada, 1941-1945

Year	Short tons	\$
1941.....	14,345	390,509
1942.....	28,520	658,771
1943.....	64,360	1,461,422
1944.....	80,446	1,869,553
1945.....	83,963	2,011,139

Prior to 1941 data relating to production of peat moss were included with those of manufactures.

NOTE: The weight of peat moss shipped varies greatly, depending on the moisture content. Weight is used as a unit of measure of production (shipments) owing to the fact that Canadian moss is shipped in various forms, including bales, bags, pads, etc., and at present there is no general standardization in Canada as to size of these products.

THE SALT INDUSTRY

Producers' sales of common salt or natural sodium chloride in Canada during 1945 totalled 673,076 short tons valued at \$4,054,720 compared with 695,217 short tons worth \$4,074,021 in 1944. This represents a decrease of 22,141 short tons or 3.2 per cent in comparison with 1944. Output in 1945 came from Nova Scotia, Ontario, Manitoba and Alberta, but Ontario contributed 578,697 short tons or 86 per cent of the total.

Statistics of production represent the recovery of salt from brine wells with the exception of Nova Scotia where the output comes entirely from the underground mining of rock salt deposits.

Of the total salt produced in 1945, there were 348,743 short tons or 52 per cent consumed directly by the producers in the manufacture of caustic soda and other chemicals. Producers' sales of other salt in 1945 included 99,679 short tons of table and dairy grades; 170,493 short tons of common fine, and 50,889 short tons of common coarse. The balance, as shipped by producers, consisted of various grades, including salt for agriculture and for highway maintenance.

Nine plants were in operation in 1945. Employees numbered 724, including 114 females; salaries and wages amounted to \$1,260,769; fuel and electricity cost \$670,187, and \$143,077 was expended for chemicals and other process supplies.

Statistics relating to Canadian salt production are available only since 1886, and salt output in the Dominion since that year and to the close of 1945 totalled 12,149,197 short tons valued at \$70,422,580. Statistics relating to world production of salt have not been available since 1938. In that year the world production was estimated at 32,000,000 long tons, of which the British Empire contributed 5,200,000 long tons.

Canadian exports of salt in 1945 totalled 5,314 short tons valued at \$105,494; imports during the same period amounted to 137,167 short tons worth \$805,002.

Caustic soda, chlorine and hydrochloric acid are manufactured by Canadian Industries Limited from salt obtained from the company's wells located at Sandwich, Ontario. This company also operates similar plants at Cornwall, Ontario, and at Shawinigan Falls, Quebec.

The Brunner Mond Canada, Limited, located at Amherstburg, Ontario, manufactures soda ash from natural brine; calcium chloride is also recovered as a by-product of this company.

Table 304.—Principal Statistics for the Salt Industry in Canada, 1936-1945

Year	Estab- lish- ments	Employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies and containers	Gross value of products sold dur- ing year including containers (f.o.b. works)
	Number	Number	\$	\$	\$	\$
1936.....	9	506	640,644	181,502	558,835	2,300,791
1937.....	9	543	653,136	183,117	610,498	2,334,016
1938.....	9	562	786,720	278,711	607,175	2,489,719
1939.....	9	547	741,736	276,267	508,511	2,957,982
1940.....	9	586	836,506	321,589	539,179	3,322,250
1941.....	9	668	1,018,652	450,291	725,675	3,852,499
1942.....	9	675	1,114,574	536,649	882,599	4,593,003
1943.....	9	682	1,223,009	596,252	943,522	5,188,628
1944.....	9	710	1,302,143	652,126	846,298	4,786,084
1945.....	9	724	1,260,769	670,187	953,054	4,864,697

NOTE: Six plants in Ontario and 1 in each of Nova Scotia, Manitoba and Alberta.

Table 305.—Production of Salt in Canada, by Grades, 1944 and 1945

	1944			1945		
	Manufac- tured	Sold	Value of salt sold (not including containers)	Manufac- tured	Sold	Value of salt sold (not including containers)
	Tons	Tons	\$	Tons	Tons	\$
Table, dairy and pressed blocks.....	94,478	93,776	1,847,320	100,352	99,679	1,886,955
Common, fine.....	173,564	172,275	1,124,148	169,329	170,493	1,153,289
Common, coarse.....	55,969	55,476	479,056	48,430	50,889	412,762
Highway salt.....	293	293 (*)	2,124			
Land salt.....	108	98	826	141	131	1,120
Other grades.....	2,980	3,100	45,052	3,502	3,396	51,358
Brine for chemical works (salt equivalent sold or used).....	(a) 370,199	(*) 370,199	(*) 575,495	348,743	348,488	549,236
Total of Above.....	697,591	695,217	4,074,021	670,497	673,076	4,054,720
Value of containers.....			712,063			809,977
Gross Value.....			4,786,084			4,864,697

(*) Value partly estimated.

Table 306.—Production of Salt in Canada, by Provinces(*), 1932-1945

Year	Nova Scotia		Ontario		Manitoba		Alberta	
	Tons	\$	Tons	\$	Tons	\$	Tons	\$
1932.....	31,897	150,708	231,138	1,789,751	508	7,092		
1933.....	34,278	161,889	244,107	1,755,087	1,499	18,388		
1934.....	42,886	191,917	276,751	1,734,166	1,664	20,137		
1935.....	38,701	161,659	320,003	1,698,508	1,538	18,765		
1936.....	38,774	183,915	350,044	1,557,078	2,498	32,151		
1937.....	47,865	216,401	407,701	1,539,599	3,391	43,465		
1938.....	44,950	194,759	388,130	1,657,140	2,920	34,979	4,045	46,035
1939.....	47,885	213,029	370,843	2,200,189	2,453	35,888	3,319	37,526
1940.....	42,495	220,328	412,401	2,371,780	3,076	45,731	6,742	185,430
1941.....	54,007	307,637	477,170	2,512,166	13,051	115,367	16,617	260,995
1942.....	50,199	317,798	553,407	2,793,328	22,706	397,101	22,360	335,960
1943.....	47,775	245,157	594,889	3,356,870	27,523	497,227	17,499	280,124
1944.....	38,809	281,482	603,806	2,906,117	27,267	488,776	25,335	397,646
1945.....	37,825	254,138	578,697	2,920,973	27,133	449,561	29,421	430,048

(*) In addition, Saskatchewan produced 231 tons valued at \$4,510 in 1933; 452 tons at \$8,703 in 1934, and 101 tons at \$2,046 in 1935.

Table 307.—Total Production of Salt in Canada for Specified Years, 1886-1945

Year	Tons	\$	Year	Tons	\$
1886.....	62,359	227,195	1932.....	263,543	1,947,551
1890.....	43,754	198,857	1933.....	280,115	1,939,874
1900.....	62,055	279,458	1934.....	321,753	1,954,953
1913.....	100,791	491,280	1935.....	360,343	1,880,978
1914.....	107,038	493,648	1936.....	391,316	1,773,144
1915.....	119,900	600,226	1938.....	440,045	1,912,913
1916.....	132,903	717,653	1939.....	424,500	2,486,632
1917.....	138,909	1,047,792	1940.....	464,714	2,823,269
1918.....	131,727	1,285,039	1941.....	560,845	3,196,165
1919.....	148,301	1,397,929	1942.....	653,672	3,844,187
1920.....	209,855	1,544,724	1943.....	687,686	4,379,378
1921.....	164,658	1,673,685	1944.....	695,217	4,074,021
1929.....	330,264	1,578,086	1945.....	673,076	4,054,720
1931.....	259,047	1,904,149			

Table 308.—Salt Produced for Chemical Purposes(*), 1928-1945

Year	Quantity tons (2,000 lb.)	Per cent of total salt output	Year	Quantity tons (2,000 lb.)	Per cent of total salt output
1928.....	135,138	45	1937.....	205,149	45
1929.....	168,327	51	1938.....	170,938	39
1930.....	114,737	42	1939.....	187,958	44
1931.....	97,958	38	1940.....	224,009	48
1932.....	96,242	37	1941.....	258,711	46
1933.....	104,740	37	1942.....	327,548	50
1934.....	124,132	39	1943.....	346,145	50
1935.....	145,433	40	1944.....	370,199	53
1936.....	165,882	42	1945.....	348,488	52

(*) Used in the manufacture of chemicals by producers of salt.

Table 309.—Production in Canada, Imports, Exports and Consumption of Salt, 1944 and 1945

	1944		1945	
	Tons	Value	Tons	Value
		\$		\$
Production.....	695,217	4,074,021	673,076	4,054,720
IMPORTS—				
Salt, for the use of the sea or gulf fisheries.....	31,458	173,123	23,703	174,211
Salt, in bulk, n.o.p.....	91,358	461,953	88,822	443,192
Salt, n.o.p., in bags, barrels, etc.....	24,466	211,981	19,641	187,599
Total.....	147,282	847,057	137,166	805,002
EXPORTS.....	3,182	80,672	5,313	105,494
Apparent Consumption.....	839,317	4,840,406	804,929	4,754,228

Table 310.—Employees, Salaries and Wages in the Salt Industry in Canada, 1940-1945

Year	Number of employees					Salaries	Wages	Total salaries and wages
	On salaries		On wages		Total em- ployees			
	Male	Female	Male	Female				
						\$	\$	\$
1940.....	80	40	436	30	586	299,521	536,985	836,506
1941.....	106	42	490	30	668	361,661	656,991	1,018,652
1942.....	86	48	509	32	675	337,050	777,524	1,114,574
1943.....	82	53	495	52	682	366,555	856,454	1,223,009
1944.....	87	59	504	60	710	397,113	905,030	1,302,143
1945.....	93	54	517	60	724	367,132	893,637	1,260,769

Table 311.—Wage-Earners in the Salt Industry in Canada, by Months, 1944 and 1945

Month	1944				1945			
	Surface		Under-ground	Total	Surface		Under-ground	Total
	Male	Female	Male		Male	Female	Male	
January.....	470	61	30	561	461	56	31	548
February.....	468	59	28	555	464	61	30	555
March.....	459	57	30	546	462	60	30	552
April.....	455	61	30	546	469	64	34	567
May.....	467	58	31	556	470	54	32	556
June.....	484	58	32	574	480	59	35	574
July.....	480	57	29	566	498	55	33	586
August.....	479	57	30	566	493	62	30	585
September.....	481	56	28	565	489	71	25	585
October.....	479	64	29	572	513	71	28	612
November.....	486	65	31	582	517	66	32	615
December.....	485	55	30	570	496	50	32	578
Average.....	474	60	30	564	486	60	31	577

THE TALC AND SOAPSTONE INDUSTRY

Producers' shipments of crude and milled talc and soapstone totalled 27,088 tons valued at \$294,888 in 1945 compared with 32,597 tons at \$357,249 in 1944. Operators in Quebec shipped 14,225 tons of talc and soapstone worth \$153,694 and mines in Ontario sold 12,863 tons, mostly high grade talc, valued at \$141,194.

Imports of talc and soapstone in 1945 amounted to 6,389 tons at \$131,863, and exports of talc totalled 7,363 tons valued at \$100,114.

The 5 active firms in the industry in 1945 employed 103 workers to whom \$134,782 were paid in salaries and wages. Fuel and electricity cost \$27,978 and process supplies for the mines cost \$49,266.

The Bureau of Mines, Ottawa, has given the following information with regard to the talc industry:

"Canada is self-sufficient in respect to most of the grades of ground talc needed for its industrial requirements, and there is a considerable surplus for export. It also produces most of the sawn dimension soapstone and talc crayons used, but is dependent on imports, obtained mainly from the United States, for certain special qualities of ground talc demanded by the ceramic, paint and cosmetic trades.

"Ground talc has a wide variety of uses, but much the greater part of the output is employed in the paint, roofing, paper, rubber and ceramic industries. It is used, also, in foundry facings, bleaching fillers for textiles, cosmetics and pharmaceuticals, soaps and cleansers, insecticides, polishes, plastics, and for rice polishing.

"Soapstone, a soft greenish rock containing a high percentage of talc, is used extensively in the form of sawn blocks and bricks for lining the alkali recovery of furnaces and kilns of kraft pulp and paper mills. It is also used for brick and slab liners for fireboxes, stoves and ovens, and for switch board panels, laboratory benches, etc. Considerable quantities of soapstone quarry and sawing waste are ground and marketed as low-grade talc to the rubber, roofing, foundry and other trades."

Table 312.—Principal Statistics of the Talc and Soapstone Industry in Canada, 1943-1945

	1943	1944	1945
Number of firms.....	8	6	5
Capital employed..... \$	576,691	(*)	(*)
Number of employees—On salary.....	10	14	11
On wages.....	80	99	92
Total.....	90	113	103
Salaries and wages—Salaries..... \$	23,794	29,532	28,714
Wages..... \$	77,925	104,351	106,068
Total..... \$	101,719	133,883	134,782
Selling value of products (Gross)..... \$	266,685	357,249	294,888
Cost of fuel and purchased electricity..... \$	24,104	27,642	27,978
Cost of explosives and other process supplies..... \$	33,927	40,523	49,266
Selling value of products (net)..... \$	208,654	289,084	217,644

(*) Data not collected in 1944 and 1945.

Table 313.—Producers' Shipments of Talc and Soapstone(*), 1943-1945

	1943		1944		1945	
	Quantity	Value	Quantity	Value	Quantity	Value
	tons	\$	tons	\$	tons	\$
Soapstone (Quebec) (†).....	14,204	135,469	19,013	204,127	14,225	153,694
Talc (Ontario).....	11,959	131,216	13,584	153,122	12,863	141,194
Total Canada.....	26,163	266,685	32,597	357,249	27,088	294,888

(*) Includes both crude and milled grades.

(†) Shipments by some firms usually include a considerable quantity of material classified as talc.

Table 314.—Production(*) of Talc and Soapstone in Canada, 1930-1945

Year	Tons	Value	Year	Tons	Value
		\$			\$
1930.....	27,247	186,216	1938.....	13,814	144,848
1931.....	21,916	157,083	1939.....	18,241	170,066
1932.....	13,275	159,038	1940.....	23,791	229,639
1933.....	16,829	190,836	1941.....	34,632	360,809
1934.....	15,532	180,777	1942.....	29,568	310,824
1935.....	15,301	171,532	1943.....	26,163	266,655
1936.....	16,587	177,270	1944.....	32,597	357,249
1937.....	15,939	163,814	1945.....	27,088	294,888

(*) Producers' shipments.

Table 315.—Wage-Earners(*), by Months, 1944 and 1945

Month	1944			1945		
	Surface	Under-ground	Mill	Surface	Under-ground	Mill
January.....	47	22	21	39	20	51
February.....	41	25	21	44	21	47
March.....	46	20	24	39	21	44
April.....	66	19	21	31	25	32
May.....	47	18	25	26	25	30
June.....	74	18	26	46	19	28
July.....	60	16	25	44	21	28
August.....	59	18	25	42	21	26
September.....	49	15	31	45	20	28
October.....	52	15	33	33	21	26
November.....	55	17	33	22	14	19
December.....	35	14	36			
Average.....	52	19	28	38	21	33

(*) All male.

Table 316.—Imports and Exports of Talc, 1944 and 1945

	1944		1945	
	Tons	\$	Tons	\$
IMPORTS—Talc or soapstone.....	6,094	130,603	6,389	131,863
EXPORTS—Talc.....	11,920	157,178	7,363	100,114

Table 317.—Available Statistics on the Consumption of Ground Talc and Soapstone in Canada, 1945

	Tons		Tons
(a) By Uses		(b) By PROVINCES	
Paints.....	5,885	Nova Scotia.....	59
Roofing.....	6,168	New Brunswick.....	475
Pulp and paper.....	2,454	Quebec.....	8,133
Rubber.....	2,656	Ontario.....	10,731
Toilet preparations.....	638	Manitoba.....	1,439
Medicinal and pharmaceutical.....	735	Saskatchewan.....	42
Electrical apparatus.....	199	Alberta.....	67
Imported clay products.....	713	British Columbia.....	641
Soaps and cleaning preparations.....	735		
Textiles.....	267	Total.....	21,587
Insecticides.....	943		
Polishes.....	23		
Prepared foundry facings.....	10		
Iron foundries.....	106		
Plastics.....	10		
Adhesives.....	45		
Total.....	21,587		

MISCELLANEOUS INDUSTRIAL OR NON-METAL MINING INDUSTRIES

Included in this section are the following non-metallic minerals and mineral products:—

Barite	Graphite	Silica Brick
Corundum	Grindstones	Sodium Carbonate
Diamonds	Magnesitic Dolomite	Sodium Sulphate
Diatomite	Magnesium Sulphate	Strontium Minerals
Fluorspar	Natural Mineral Waters	Sulphur (Pyrites)
Garnet	Phosphate	Volcanic Dust

Canadian operators producing certain industrial minerals, and who are usually relatively few in number, have been segregated for statistical purposes into a single group designated as the Miscellaneous Industrial or Non-Metallic Minerals Industry. Minerals or primary mineral products produced (or deposits developed) by this industry during 1945 included barite, brucite, diatomite, fluorspar, graphite, grindstones, magnesitic-dolomite (crude and refined), mineral waters, phosphate, silica brick, sodium carbonate and sodium sulphate. For convenience, the sulphur content of pyrites shipped and sulphur recovered from smelter gas are recorded with the various miscellaneous minerals listed above; the value of sulphur production, however, is not included in the total for the miscellaneous non-metallic or industrial minerals as the value of this element is credited to the copper-gold-silver mining and non-ferrous smelting industries.

During the year under review this industry's production had a gross value of \$4,415,718 compared with \$3,986,579 in 1944. The 879 employees were paid \$1,601,068 in wages and salaries. About \$1,355,937 was spent for the purchase of fuel, electricity, process supplies and containers.

Table 318.—Principal Statistics Relating to Miscellaneous Non-Metal Mining Industries in Canada, 1944 and 1945

	1944	1945
Number of plants.....	52	51
Number of employees—On salary.....	116	119
On wages.....	749	760
Total	865	879
Salaries and wages—Salaries.....	\$ 240,499	225,824
Wages.....	\$ 1,259,751	1,375,244
Total	\$ 1,500,250	1,601,068
Selling value of products (gross).....	\$ 3,986,579	4,415,718
Cost of fuel and electricity.....	\$ 706,929	780,313
Cost of process supplies used.....	\$ 462,999	540,701
Cost of containers.....	\$ 18,932	34,923
Selling value of products (net).....	\$ 2,797,719	3,059,781

Table 319.—Wage-Earners, by Months, in the Miscellaneous Non-Metal Mining Industries in Canada, 1944-1945

Month	1944					1945				
	Mine			Mill		Mine			Mill	
	Surface		Under-ground			Surface		Under-ground		
	Male	Female				Male	Female		Male	Female
January.....	154	2	64	470	127	1	40	528	1	1
February.....	142	2	66	437	134	1	42	502	1	1
March.....	144	2	62	471	147	1	58	470	1	1
April.....	178	2	47	432	215	61	456	1	1	1
May.....	264	2	61	480	225	65	499	1	1	1
June.....	288	3	63	464	227	71	470	1	1	1
July.....	283	4	63	483	250	71	505	1	1	1
August.....	266	4	69	453	245	74	507	1	1	1
September.....	254	3	55	426	194	70	485	1	1	1
October.....	258	3	55	490	236	66	486	1	1	1
November.....	246	7	53	505	196	68	556	1	1	1
December.....	170	1	34	479	154	64	497	1	1	1

Table 320.—Production of Miscellaneous Non-Metallic Minerals in Canada, 1944 and 1945

Item	Unit of measure	1944		1945	
		Quantity	Value	Quantity	Value
			\$		\$
Barite.....	ton	118,719	1,023,696	139,589	1,211,403
Corundum.....	ton	173	17,830	1,317	133,762
Diatomite.....	ton	13	437	46	1,238
Fluorspar.....	ton	6,924	217,701	7,369	233,708
Garnets (schist).....	ton	3	125	.....	.....
Graphite.....	ton	1,582	179,457	1,910	187,364
Grindstones (b).....	ton	225	12,000	225	10,870
Magnetitic dolomite (c).....	ton	1,139,281	.....	.....	1,278,596
Mineral waters.....	Imp. gal.	156,150	88,918	244,761	149,690
Phosphate (a).....	ton	482	6,716	299	4,356
Silica brick.....	M	3,997	312,092	4,208	317,263
Sodium carbonate.....	ton	44	484	286	3,146
Sodium sulphate.....	ton	102,421	987,842	93,068	884,322
Volcanic dust.....	ton	.....	.....	.....	.....
Total (Gross).....			3,986,579		4,415,718
Sulphur production (*).....	ton	248,088	1,755,739	250,114	1,881,321

(a) Represents apatite mined in Quebec and Ontario, usually a by-product in mica production. (b) Includes sharpening stones, etc. (c) Includes the value of calcined brucite granules shipped from Wakefield, Que.

(*) Includes sulphur content of pyrites at its sales value and estimated figures for quantity and value of sulphur in smelter gases used for acid making or recovered as elemental sulphur, or in ammonium sulphate (direct). General statistics relating to production of sulphur included with those of the copper-gold mining and non-ferrous smelting industries.

BARITE

"Production of barite in Canada, which in 1944 showed a five-fold gain over 1943, continued to rise in 1945. Sales by primary producers comprised crude ore and ground material. In contrast with the long period of virtual stagnation, production is now well established. Domestic needs are relatively small, but important export outlets have developed in the past few years in the United States, notably for use in oil-well drilling and in the manufacture of lithopone and barium chemicals. Barite shortages in the United Kingdom, Belgium and the Netherlands, have also recently occasioned interest regarding a Canadian supply, and this may lead to the establishment of outlets in Europe.

"Production continued to be confined to Nova Scotia which supplied 77 per cent of the total, and to British Columbia, in both of which provinces increases were recorded.

"In Nova Scotia, the Canadian Industrial Minerals, Limited, the only producer in eastern Canada, continued to expand its important operation at Walton, Hants county, and reported slightly higher shipments than in 1944. Further prospecting by geo-physical methods is reported to have indicated continuation of the orebody for 500 feet beyond the 600 foot length already disclosed by open-cut mining, thus confirming the results shown by drilling. Estimated reserves now stand at nearly 2,500,000 short tons, about 30 per cent of which may require beneficiation to bring up to shipping grade. Open quarry operation was continued throughout 1945 and the pit level was carried to 80 feet below surface, but it is planned to commence underground mining in 1946. With this in view, a shaft was sunk to a depth of 40 feet and collared before the close of the year, and provision was being made to bring in electric power. Preparations were being made to improve the efficiency of the washing plant, and this is expected to result in saving considerable fine barite which has been going to waste. Tests by the Bureau of Mines, Ottawa, have shown that a substantial recovery of such fine barite in the form of a 95 per cent, or better, concentrate can be made by screening, washing and tabling, thus reducing present tailing losses by about one-third.

"The average unit price of domestic crude barite sold by primary producers in 1945 for use in the manufacture of lithopone, chemicals, fillers, pigments, and glass, was \$7 to \$7.35 per short ton f.o.b. mine. Crude lump sold for ballast purposes was valued at \$3 per ton. Ground, off-colour barite exported for oil-well drilling use sold for \$15.80 per ton f.o.b. Atlantic ports, and ground white for pigment and filler trade averaged \$33 per ton f.o.b. mill.

"In the American market, crude barite is usually sold on a penalty-premium basis, a content of 94 per BaSO_4 and less than 1 per cent iron (Fe_2O_3) being considered standard. A premium or penalty of 25 cents per ton is set for each per cent of barium sulphate above or below 94 per cent and a similar premium or penalty for each 0.1 per cent of Fe_2O_3 below or above 1 per cent."

Table 321.—Production of Barite in Canada, 1913-1945

Year	Short tons	\$	Year	Short tons	\$
1913.....	641	5,410	1927.....	56	1,268
1914.....	612	6,189	1928.....	127	2,847
1915.....	550	6,875	1929.....	105	2,341
1916.....	1,368	19,393	1930.....	66	1,484
1917.....	3,490	54,027	1931.....	16	363
1918.....	640	10,165	1932.....		
1919.....	468	8,154	1933.....	20	60
1920.....	751	22,983	1939.....	323	3,639
1921.....	270	9,567	1940.....	338	4,819
1922.....	289	9,537	1941.....	6,890	74,416
1923.....	409	8,548	1942.....	19,667	188,144
1924.....	151	3,308	1943.....	24,474	279,253
1925.....	95	2,259	1944.....	118,719	1,023,696
1926.....	100	2,307	1945.....	139,589	1,211,403

Table 322.—Imports of Barite into Canada, 1940-1945

Year	Tons	\$
1940.....	2,622	64,922
1941.....	3,431	81,620
1942.....	2,536	68,196
1943.....	1,686	43,239
1944.....	1,824	47,913
1945.....	1,150	32,531

Table 323.—Consumption of Barite in Canada, 1940-1945

	1940	1941	1942	1943	1944	1945
	Tons	Tons	Tons	Tons	Tons	Tons
(a) BY USES						
Paints.....	1,641	2,453	3,417	2,760	1,971	1,749
Rubbergoods.....	646	830	557	351	238	478
Wall paper.....	25	13	18	15	20	22
Glass.....	304	367	286	290	294	879
Linoleum.....				109		
Miscellaneous.....	41	180	161	124	226	200
Total.....	2,657	3,843	4,439	3,649	2,799	3,328
(b) BY PROVINCES						
Nova Scotia.....	53	109	67	38	41	33
Quebec.....	836	1,483	1,639	1,191	893	931
Ontario.....	1,505	1,902	2,325	1,983	1,388	1,916
Manitoba.....	99	113	155	162	183	210
Saskatchewan.....	3	5	10	11	8	4
Alberta.....	78	96	93	128	119	105
British Columbia.....	83	135	150	136	167	129
Canada.....	2,657	3,843	4,439	3,649	2,799	3,328

NOTE: Above figures do not include amounts used in oil drilling.

CORUNDUM

(From the annual review of the Bureau of Mines, Ottawa)

"The Canadian corundum industry has been dormant since 1921, the activity during 1944 and 1945 being the result of the circumstances arising from the war. Owing to the difficulty of obtaining "flour" corundum, used for polishing high precision lenses for military optical instruments, from the Transvaal, in South Africa, the only source of supply, the Wartime Metals Corporation (a Crown company) erected a 200 ton gravity mill to treat tailing at the Craigmont property, Renfrew county, Ontario. This project was undertaken at the request of the United States Government and shipments of concentrate to the American Abrasive Company's plant at Westfield, Massachusetts, U.S.A., for grinding and for the preparation of fine powders were started in the fall of 1944. Shipments have been maintained steadily at the rate of nearly 110 tons monthly. By the end of 1945 a total of 75,000 tons of tailing had been treated and it was estimated that the treatment of the remaining 50,000 tons would be completed by September 1946. The tailing has a corundum content of about 3 per cent. Since November, 1945, the Craigmont operations have been handled by the Department of Reconstruction and Supply, Ottawa.

"In March, 1946, U.S. Conservation Order M.89, covering corundum, was revoked and supplies of all corundum products can now be obtained without difficulty. Under these circumstances when the treatment of Craigmont tailing is completed it is likely that Canadian corundum operations will again be dormant for an indefinite time.

"Corundum (Al_2O_3), the oxide of aluminum, usually occurs as bronze coloured barrel-shaped crystals. It is fairly heavy, and has a hardness (Moh's scale) of 9, being the hardest known mineral next to diamond (hardness 10).

"All of the Canadian production of corundum has come from a corundum-bearing belt of nepheline syenite that passes in a northeast direction through the southeast, northern, and central parts respectively, of Haliburton, Hastings and Renfrew counties in Ontario. About 82 per cent of the total output has come from the Craigmont property, the chief source of the remainder being the Burgess deposits, about 5 miles to the west. The belt is about 100 miles long and 6 miles wide and is the most northerly of three belts of syenites in which corundum is known to occur. The middle belt is in Methuen and Burleigh townships, Peterborough county, and the southern belt, 65 miles to the east, is in Frontenac county. The corundum content of a deposit in the French River area, northeast of Georgian Bay, is much below commercial grade.

"From 1901 when production was commenced until 1915 the Dominion was the leading producer of the mineral, and from 1901 to 1918 inclusive, a total of 19,000 tons of concentrate valued at \$2,024,000 was shipped. A total of about 26,000 tons of mill tailing was re-treated during 1920 and 1921 from which 600 tons of concentrate valued at \$80,500 was shipped.

"Prior to the war corundum was used chiefly for the abrasive grit in grinding wheels required for special types of work. In the United States, which is by far the leading consumer, a start was made shortly after the end of the war to revert to the use of corundum for the manufacture of precision grinding wheels. Most of it is used, however, as flour for the polishing of lenses and the coarse grain for snagging wheels.

"The price of Canadian concentrate is nominal and is Government-controlled at about \$100 per ton. The prices of corundum and other ores imported into the United States were frozen as of August 20, 1943. South African "crystal" corundum was \$107 and "boulder" was \$74 per short ton delivered to the Westfield plant. United States prices of prepared grain and flour corundum vary considerably according to mesh size; these prices are 8½ cents per pound for 8 to 60 mesh and 9½ cents for 70 to 275 mesh, while flours range from 30 cents for 850 mesh to 70 cents for 2,600 mesh."

Production of corundum in Canada in 1945 was 1,317 tons having a gross value of \$133,762 at recovery plant, compared with 173 tons of concentrate valued at \$17,830 in 1944.

DIAMONDS

Although diamonds are not produced in Canada they play a very important role in the mineral industry. In 1945 the diamond drilling on Canadian mineral deposits exceeded 1,322 miles. During the year the imports of black diamonds and borts for borers were appraised at \$1,985,299 compared with \$1,721,416 in 1944. Imports of unset white diamonds in 1945 were valued at \$3,299,415 compared with \$2,073,098 in the preceding year.

The Mining Journal, London, England, gives the following review of the world industry in 1945: "In its 2,500 or more years of existence, the diamond industry has never had such a prosperous year as 1945. Production reached an all-time peak, some 14,250,000 carats, the decided increase over recent years being due to marked up-turns in output of crushing bort in the Belgian Congo and of gem stones in the Union of South Africa. Notwithstanding this, stocks were further depleted by the fact that the Diamond Trading Company's sales of rough were £24,500,000 a figure never before attained.

"In 1945 there was a further expansion in the cutting industry and toward the middle of the year there were employed outside of India and Borneo some 18,000 artisans, and toward the end of the year nearly 25,000. These figures compare with 11,000 in 1943 and 14,000 in 1944. At present the best cutting of large stones is being done in the United States, the finest small cut in the United States, Palestine and Belgium. At Montreal, during the war, the Henry Birks and Sons cut a little rough, employing about four artisans. In Toronto, Mr. S. Gross (Dominion Diamond Cutting Company, established 1941) employs from 95 to 100 men, including some refugees, cutting good melee, from 5 to 20 per carat. With soldiers returning, the industry hopes to survive post-war upheavals. The value of cut by Canadian refugee cutters is said to be worth over \$1,000,000 a year. Immediately after V-J day many war contracts were cancelled and the demand for diamond impregnated wheels and diamond-set tools dropped markedly: in the last half of the year labour disputes interfered with reconversion. In consequence the revival in demand consequent on all out production which we, who have followed the history of the industrial diamond, expected, has not as yet occurred. Sooner or later the industrial diamond will, however, regain the place in the post-war world which its physical properties warrant. At that, 1945 imports were unexpectedly large. Over a period of post-war time the demand should be excellent, although for a time scarcely as great as that of wartime. During 1945 diamond drill manufacturers introduced many improvements in their machines, increasing their efficiency. Certain types of drills are being cut as to weight, a factor of importance where transport conditions are difficult; rotational speeds are being increased. The Canadian Diamond Drilling Association continues its excellent campaign to standardize fittings, so that parts of different manufacture will be interchangeable."

Table 324.—World Production and Sales of Diamonds, 1937-1945

Year	Production	Sales	£ Sterling
	Metric carats	£ Sterling	
1937.....	9,164,024	9,151,205	
1938.....	11,619,971	3,673,934	
1939.....	12,500,553	5,865,000	
1940.....	13,012,525	6,144,314	
1941.....	9,104,978	7,414,420	Industrials..... 2,000,000 Cuttables..... 5,550,000
1942.....	9,258,734	10,694,671	Industrials..... 4,240,000 Cuttables..... 6,250,000
1943.....	8,347,239	20,500,000	Industrials..... 5,000,000 Cuttables..... 15,500,000
1944.....	11,676,578	17,000,000 (estimate)	Industrials..... 4,000,000 Cuttables..... 13,000,000
1945.....	14,257,157	24,500,000 (estimate)	Industrials..... 4,900,000 Cuttables..... 19,600,000

DIATOMITE

"Owing to the new use of diatomite as a fertilizer dusting agent, a record was set in the Canadian consumption in 1945 and both in 1944 and 1945 the amount used was more than double that of 1943. Almost all the Canadian requirements are imported as present production is insignificant. Tests which were started in 1944 to determine the suitability of Canadian material for this new use, are continuing.

"Diatomite consists of microscopically small remains of siliceous shells of diatoms, a form of algae that at one time lived under water. The material of Recent (geologically) fresh water origin, which is the most common in Canada, usually occurs as a grey or brown mud or peat, whereas the diatomite of Tertiary age is in dry and compact beds, and is very light in weight and white to cream in colour.

"There are more than 400 known deposits of diatomite in Canada. They are in the swamps and in the lake bottoms of northern Nova Scotia, in southern New Brunswick, in the Muskoka district, Ontario, and in various parts of British Columbia. The Tertiary fresh water deposits near Quesnel in the Cariboo district, British Columbia, are by far the largest known in Canada. They extend for many miles along the Fraser River, are compact, and are up to 40 feet thick. At Digby Neck, Nova Scotia, is the largest known Recent fresh water (swamp) deposit in Canada. All of the Canadian production of diatomite since 1939 has come from the aforementioned areas, the two present producers being G. Wightman, who operates the deposit at Digby Neck, and L. T. Fairey, of Vancouver, who has been obtaining his output from Lot 1122 on the west bank of the Fraser River, north of Quesnel. There has been no activity of consequence on the deposits in the Muskoka area for some time.

"Prior to 1944 between 70 and 80 per cent of the diatomite consumed in Canada was used in the form of filter-aids, mainly in the refining of cane sugar, but in 1945 only about 32 per cent was so used and about 60 per cent was consumed as a dusting agent in ammonium nitrate fertilizers that are made in three plants, one in Welland, Ontario, one in Calgary, Alberta, and the other in Trail, British Columbia. The diatomite thus used is highly porous and when added to nitrate absorbs moisture which prevents the nitrate from caking and insures even spreading. Specifications call for uncalcined material of 325 mesh and less than 5 per cent moisture. The remainder of the diatomite consumed was used chiefly as a filler in the paint, chemical, paper, rubber, soap and textile industries; also in silver polish bases and as an admixture in concrete. A small amount of lime-diatomite insulation bricks is made by one company in Toronto which uses some of the Nova Scotia material.

"During the war one of the chief uses of diatomite was in pressure filters for the filtration of portable water, mainly for use in the Pacific. This use is now being applied in industrial plants and the diatomite is superior to sand filters for the removal of disease-producing organisms. It was used also in the war for blocks and pipe insulation in combination with asbestos in the naval construction program; in fireproof structural sheets for minimizing fire hazards on war-ships; and in paints for army equipment.

"The price of diatomite used in Canada for insulation varies from \$23 to \$40 per ton; for filtration from \$26 to \$75 per ton; for fertilizer grades, \$28 to \$42 per ton; for material suitable for polishes the price for small lots ranged up to \$200 a ton. Imported insulation bricks vary in price from \$85 to \$140 per 1,000, according to grade and density."

Production (shipments) of diatomite in 1945 was 46 tons valued at \$1,238.

Table 325.—Production of Diatomite in Canada, 1928-1945

Year	Short tons	\$	Year	Short tons	\$
1928.....	368	8,960	1937.....	643	18,606
1929.....	429	10,330	1938.....	398	13,842
1930.....	554	13,247	1939.....	301	10,388
1931.....	1,610	32,789	1940.....	248	7,957
1932.....	1,496	29,509	1941.....	344	9,935
1933.....	1,789	36,648	1942.....	365	9,086
1934.....	1,372	54,910	1943.....	98	3,331
1935.....	823	33,140	1944.....	13	437
1936.....	615	13,650	1945.....	46	1,238

Table 326.—Consumption of Infusorial Earth by the Canadian Sugar Refining Industry, 1932-1945

Year	Tons	Value	Year	Tons	Value
		\$			\$
1932.....	1,289	73,309	1939.....	2,410	105,711
1933.....	1,254	70,191	1940.....	2,492	112,369
1934.....	1,281	69,116	1941.....	2,672	138,973
1935.....	2,154	96,560	1942.....	1,504	75,295
1936.....	2,188	98,954	1943.....	1,726	89,075
1937.....	2,293	95,532	1944.....	2,188	115,053
1938.....	2,454	101,473	1945.....	1,992	102,961

Table 327.—Consumption of Diatomaceous Earth in the Manufacture of Fertilizers, 1944 and 1945

Year	Tons	\$
1944.....	9,690	297,987
1945.....	6,444	274,968

FLUORSPAR

(From the annual review of the Bureau of Mines, Ottawa)

"Canada depends largely upon imports to meet the needs of industry for fluorspar. Since 1929, virtually all of the Canadian production has come from Madoc area in Hastings county, Ontario, but there has been a small production from the Lake Ainslie area in Nova Scotia.

"There were no noteworthy changes in the industry in 1945. Practically all of the production came from the Madoc area, and shipments from the area continued at substantially the same level as in 1944. The Dominion Government, through the Mines and Geology Branch, Department of Mines and Resources, continued the general supervision of operations in the Madoc field as an aid to producers in maintaining out-put. This program, which included also diamond drilling, loans against production, and other forms of assistance, was initiated in 1942, and 86 per cent of the total reported shipments to the end of 1945 came from operators so assisted.

"In 1945 there were 4 mines in active production in the Madoc area, namely the Bailey (Millwood Fluorspar Mines, Limited); Rogers (Reliance Fluorspar Mining Syndicate); Blakeley (Charles Stoklosar); and Lee Junior (Bassett Fluorspar Mines, Limited). Most of the mine shipments from this field consisted of material considerably below standard metallurgical specifications, chiefly screened fines sweetened with clean, picked lump. Average grade of such combined product customarily has ranged from 60 to 65 per cent CaF_2 , calcite and barite being the chief impurities. No commercial beneficiation of Madoc fluorspar has ever been practised. During 1945, milling tests were continued in the laboratories of the Bureau of Mines, Ottawa, on trial shipments of Madoc ore in an effort to reduce the objectionably high barite content. Similar work on fluorspar ores from the Lake Ainslie district having the same general characteristics, showed that, by blending the ore which did not prove amenable to concentration with that from another property, satisfactory recovery of fluorspar and barite in the form of marketable products can be made.

"Fluorspar, associated with calcite and apatite, occurs as the filling of veins and pockets in pegmatite bodies in the Wilberforce-Harcourt district, about 50 miles north of Madoc, where some surface work and diamond drilling was done on several properties in 1943. Tops Mining Syndicate, the only operator in 1945, did a little more work on its holdings near Harcourt, but made no shipments.

"Dominion Magnesium, Limited, opened a few shallow pits and also did some diamond drilling on several of the showings near Cobden in Ross township, Renfrew county, to determine whether the deposits might serve to supply the fluorspar requirements of the company's magnesium plant at nearby Haley. Concentration tests are reported to have yielded a product of 95 per cent grade.

"No further work was done in 1945 on the fluorspar deposits near Sand Creek, Pontiac county, Quebec. In 1944 Twin Valley Prospecting Syndicate, Ottawa, shipped about 20 tons of clean, picked spar from the deposits to Dominion Magnesium Limited. Grade is reported to have run 92 to 98 per cent CaF_2 .

"There was no reported production of fluorspar in Nova Scotia in 1945. Shipments totalling nearly 1,500 tons were made from two properties in Lake Ainslie district, between 1941 and 1943. The material was considerably below metallurgical grade, and further development will depend upon treatment of the ores to produce fluorspar and barite concentrates.

"In British Columbia, there has been no production of fluorspar since 1929. Output came from the Rock Candy mine of Consolidated Mining and Smelting Company, near Grand Forks, from which 42,000 tons of concentrate was produced between 1919 and 1929.

"Canadian Trade Journal quotations for metallurgical gravel, 85 per cent grade, fluorspar in 1945 were \$40 per ton f.o.b. Toronto, and for ground, 97 per cent grade \$66 to \$69.

"Fluorspar has a variety of industrial uses, in most of which it serves as a powerful fluxing agent. The steel industry is by far the largest consumer. Fluorspar is used in small amounts in numerous other metallurgical industries.

"The next largest use is in the manufacture of hydrofluoric acid, which is used mainly in making artificial cryolite and aluminum fluoride for the aluminum industry. Third in importance is the use of fluorspar as a fluxing and opacifying ingredient in glass and enamels. Of interest also is the use of the fluorite compound, uranium hexafluoride, for gaseous diffusion separation of the uranium isotopes U^{235} and U^{238} in the development of atomic energy.

"Standard fluxing gravel or lump grade for metallurgical use is usually sold on a specification of a minimum of 85 per cent CaF_2 and not over 5 per cent silica or 0.3 per cent sulphur. Fines should not exceed 15 per cent. Canadian shipments have been much below this standard, and in some cases consumers sweeten the material with higher grade imported spar.

"Glass and enamel grades call for not less than 95 per cent CaF_2 , with a maximum of $2\frac{1}{2}$ to 3 per cent SiO_2 and 0.12 per cent FeO_3 . The material must be in mesh sizes ranging from coarse to extra fine.

"Acid grade spar has the most rigid specification, namely, a minimum of 98 per cent CaF_2 and not over 1 per cent SiO_2 . It must be in powder form. Most of the material supplied to the acid and ceramic trades is a flotation concentrate."

Table 328.—Principal Statistics of the Fluorspar Mining Industry in Canada, 1944 and 1945

		1944	1945
Active firms.....	No.	10	7
Employees—On salary.....	No.	11	11
Wage-earners.....	No.	67	63
Total.....	No.	78	74
Salaries and wages—Salaries.....	\$	17,237	17,035
Wages.....	\$	85,094	82,610
Total.....	\$	102,331	99,645
Gross value of production.....	\$	217,701	233,708
Cost of fuel and electricity.....	\$	14,869	14,003
Process supplies used.....	\$	10,148	9,312
Net value of production.....	\$	192,684	210,393

Table 329.—Production of Fluorspar in Canada, 1924-1945

Year	Short tons	\$	Year	Short tons	\$
1924.....	76	1,343	1936.....	75	900
1925.....	3,886	19,234	1937.....	150	2,550
1926-1928.....			1938.....	217	3,906
1929.....	17,870	268,120	1939.....	240	4,995
1930.....	80	1,240	1940.....	4,454	59,317
1931.....	40	620	1941.....	5,534	97,767
1932.....	32	464	1942.....	6,199	146,039
1933.....	73	1,064	1943.....	11,210	318,424
1934.....	150	2,100	1944.....	6,924	217,701
1935.....	75	900	1945.....	7,369	233,708

Table 330.—Imports of Fluorspar into Canada, 1929-1945

Year	Tons	\$	Year	Tons	\$
1929.....	12,092	159,798	1938.....	15,057	212,131
1930.....	12,651	160,995	1939.....	16,322	258,796
1931.....	3,216	31,257	1940.....	30,312	628,719
1932.....	1,009	22,965	1941.....	26,530	567,656
1933.....	2,219	21,165	1942.....	47,784	1,046,526
1934.....	7,220	56,628	1943.....	77,436	1,738,669
1935.....	11,591	92,775	1944.....	37,100	840,309
1936.....	11,194	95,268	1945.....	20,517	530,670
1937.....	11,444	158,082			

Table 331.—Consumption of Fluorspar in Canada, 1940-1945

	1940	1941	1942	1943	1944	1945 (*)
(a) BY USES	Tons	Tons	Tons	Tons	Tons	Tons
Steel.....	15,307	17,054	20,133	20,790	20,024	19,462
Glass.....	140	185	231	273	376	302
Enamelling and glazing.....	265	300	434	216	243	200
Heavy chemicals.....	3,459	3,405	3,599	2,680	3,113	3,600
Non-ferrous smelters.....	5,882	10,194	22,493	39,396	33,643	12,830
Ferro-alloys.....	14		853	1,407	104	792
White metal alloys.....	28	15	13	23	30	20
Miscellaneous.....		62	13	137	99	100
Total.....	25,095	31,215	47,769	64,922	57,632	37,306
(b) BY PROVINCES						
Nova Scotia.....	7,995	7,886	8,898	7,916	9,112	7,390
Quebec.....	5,804	10,422	21,471	38,990	32,745	13,300
Ontario.....	10,924	12,532	15,565	17,309	15,371	16,266
Manitoba.....	192	175	212	210	165	170
Alberta.....		52	138	151	118	70
British Columbia.....	180	143	1,485	346	121	110
Total.....	25,095	31,215	47,769	64,922	57,632	37,306

(*) Preliminary—subject to revision.

GARNET

(From the annual review of the Bureau of Mines, Ottawa)

"The Niagara Garnet Company remodelled its small concentrator at Sturgeon Falls, Ontario, and installed machinery for making flour grades. About 100 tons of 50 per cent garnet ore was shipped in 1945 to the concentrator from a deposit near River Valley, in Dana township, about 25 miles to the northwest. The concentrates were pulverized and converted into seven grades of flour ranging from 45 micron down to 3 micron in size. The flours are being stored for ultimate shipment to optical companies for use in lens grinding and polishing. About half a ton of mixed flour grades is being produced daily. The Canada Garnet, Limited, did not mine or treat any garnet at its property south of Labelle, 100 miles north of Montreal.

"Over 85 per cent of the world output of garnet comes from North Creek, New York, and the product is regarded as the world standard garnet. Production from this area in 1945 was about the same as in the previous year, namely, 4,700 tons.

"Concentration of garnet is improved by using the sink-float process as a rougher to eliminate the coarse tails, and the concentrate is improved by subjecting it to a heat treatment process.

"Garnet, crushed and suitably graded as to size, is used for making abrasive-coated papers and cloth, which in turn are used mainly in the wood working (hard woods) and to a lesser extent in the shoe leather industries. The specifications for garnet for this use are somewhat exacting. Few, if any, of the hundred or more garnet deposits so far examined in Canada fulfil all of the requirements. Garnet is used to a minor extent for sand blasting and for surfacing plate glass. Garnet superfine (flour) grades are being used as a partial substitute for corundum flour, which is used for polishing optical lenses, for which purpose several hundred tons of garnet were used in the United States in 1945.

"Canadian consumption of garnet grain suitable for 'sandpaper' manufacture has been less than 200 tons a year. At present, however, none is being used commercially for sand blasting. Competition from the artificial abrasives (silicon carbides and oxide of alumina) is a serious factor in the marketing of garnet.

"Prices of ungraded concentrate suitable for sandpaper range from \$60 to \$85 a ton, and flours from 6 cents a pound for 275 mesh, to 65 cents a pound for 5 and 10 micron."

As no Canadian garnet was sold to consumers during 1945 the production (sales) is reported as nil.

GRAPHITE

(From the annual review by the Bureau of Mines, Ottawa)

"Production of graphite in Canada in 1945, as for many years past, was confined to the Black Donald mine near Calabogie, Renfrew county, Ontario, which produces a variety of grades of mill products for different industrial uses.

"Supply of flake and crystalline grades continued the improvement shown in 1944. In November, 1944, the United States War Production Board Order controlling the allocation of graphite was amended to remove crucible graphite from the strategic class, leaving only Ceylon amorphous grade of 95 per cent carbon content on the restricted list. In view of the favourable stock position of Madagascar flake, this quality was restored to open purchase at the end of March, 1945.

"Flake graphite is widely distributed in many parts of the Canadian Shield, chiefly in gneisses and crystalline limestone. Production has been confined to adjacent sections of Western Quebec and eastern Ontario, in the general Ottawa region, where about 12 mines and mills were operated at various times in the early years of the industry. Occurrences of flake graphite in Manitoba and British Columbia have attracted little interest as yet. Bodies of amorphous graphite occur near Saint John, New Brunswick, and were worked on a small scale many years ago.

"The Frobisher Exploration Company took over the Black Donald property in 1943 and has since been operating it under the name of Black Donald Graphite Limited. Most of the production in recent years has come from re-treatment of old mill tailings pumped from the lake alongside the workings. This procedure was continued in 1945, though ore obtained by robbing

old pillars in the No. 2 shafts and salvaged from surface dumps was also put through the mill. Dewatering of the No. 3 or Ross shaft was started during the summer. The shaft was re-collared and a station was cut 290 feet from surface. Lateral work on this level was planned early in 1946 to tap the new orebody indicated by drilling. Changes in milling procedure effected a considerably improved recovery of flake. Estimated reserves at the end of 1945 comprised 8,000 tons of old tailings and 35,000 tons of ore.

"Graphite has many uses but is employed principally in foundry facings, lubricants, crucibles, retorts and stoppers, packings, pencils and crayons, paints, and stove polish. Important quantities, mostly amorphous or artificial, are used in dry batteries, electrodes, and commutator brushes. The finished products from Black Donald consist mainly of amorphous foundry grades, but include also a proportion of high-grade flake and dust sold for use in lubricants, packings, and polishes. Prepared facings for the domestic foundry trade are made also.

"Of interest is the recent announcement that considerable quantities of specially refined graphite are being used in the construction of the so-called 'atomic piles' for the production of atomic energy. In these piles, the graphite serves as a moderator to promote the capture of neutrons released by nuclear fission of uranium, which, in the form of slugs or rods, is inserted as a lattice within a large mass of graphite blocks. Additional amounts of graphite are used as a shield surrounding the piles and serve to reflect escaping neutrons back into the latter.

"Prices of domestic flake graphite in the United States in 1945 ranged from 14 cents per pound for best crucible grade down to 5 cents per pound for the lowest (No. 4) grade."

Production (sales) in Canada in 1945 was 1,910 tons valued at \$187,364.

Table 332.—Mine Production (Sales) of Graphite in Canada, 1931-1945

Year	Short tons	\$	Year	Short tons	\$
1931.....	548	32,149	1939.....	(*)	61,664
1932.....	346	18,483	1940.....	(*)	94,038
1933.....	405	18,367	1941.....	(*)	132,924
1934.....	1,518	71,424	1942.....	1,192	117,904
1935.....	1,782	79,781	1943.....	1,903	197,431
1936.....	(*)	88,812	1944.....	1,582	179,457
1937.....	(*)	125,343	1945.....	1,910	187,364
1938.....	(*)	41,590			

(*) Not available for publication.

GRINDSTONES

Grindstones, Pulpstones and Scythestones (From the annual review of the Bureau of Mines, Ottawa)

"Material suitable for these stones occurs in certain sandstone beds in Nova Scotia, New Brunswick, and on the coast of British Columbia. Many years ago the output was considerable, but most of the known beds have been depleted and the demand for natural stones has decreased.

"No natural pulpstones or scythestones were produced in Canada in 1945, but a total 225 tons of grindstones valued at \$10,870 were shipped from New Brunswick and Nova Scotia. Pulpstones were last produced in 1937 by J. A. and C. H. McDonald Company from Gabriola Island near Nanaimo and Vancouver Island. Good pulpstones are in demand, particularly for use in the large magazine grinders, but known Canadian deposits containing thick beds of sandstone of the proper quality appear to have been worked out. There is also an increasing competition from Canadian-made artificial segmental pulpstones, mainly of silicon carbide grit, and about 645 of these stones are in use and in stock in the various Canadian pulp mills. The imported natural pulpstones come mainly from West Virginia."

Table 333.—Production of Grindstones, Pulpstones and Scythestones in Canada, 1931-1945

Year	Tons	\$	Year	Tons	\$
1931.....	621	38,103	1939.....	304	15,278
1932.....	328	15,735	1940.....	341	14,543
1933.....	498	21,919	1941.....	188	11,500
1934.....	987	46,478	1942.....	216	10,000
1935.....	708	34,010	1943.....	164	6,225
1936.....	569	24,724	1944.....	225	12,000
1937.....	412	21,429	1945.....	225	10,870
1938.....	306	16,198			

Table 334.—Production of Natural Abrasive Stones, by Kinds, 1944 and 1945

	Pulpstones		Sharpening Stones		Grindstones	
	Tons	\$	Tons	\$	Tons	\$
1944						
Nova Scotia.....					225	12,000
New Brunswick.....						
Canada.....					225	12,000
1945						
Nova Scotia.....					10	600
New Brunswick.....					215	10,270
Canada.....					225	10,870

Table 335.—Consumption of Pulpstones by the Canadian Pulp and Paper Industry, 1931-1945

Year	Number for 2 ft. wood	Value	Number for 2-5 ft. wood	Value	Number for 4 ft. wood	Value
		\$		\$		\$
1931.....	226	72,588	225	71,760	285	337,580
1932.....	210	65,450	139	46,436	222	249,373
1933.....	321	98,475	95	31,945	199	223,635
1934.....	378	103,811	84	29,680	265	292,359
1935.....	417	116,501	52	20,297	237	243,505
1936.....	463	120,227	61	19,478	253	281,265
1937.....	392	123,595	84	21,700	280	382,084
1938.....	306	92,622	37	13,351	186	238,488
1939.....	242	60,622	60	22,443	203	238,620
1940.....	311	96,957	110	49,896	163	257,628
1941.....	295	127,349	77	35,843	97	215,913
1942.....	237	100,466	53	23,898	94	208,986
1943.....	197	102,888	54	20,000	66	151,411
1944.....	187	89,133	57	34,865	76	193,396
1945.....	191	117,585	33	14,132	114	271,108

MAGNESITIC DOLOMITE

Magnesitic Dolomite and Brucite (From the annual review of the Bureau of Mines, Ottawa)

"Magnesitic dolomite, a rock composed of an intimate mixture of magnesite and dolomite is quarried at Kilmar and at nearby Harrington East, Argenteuil county, Quebec, by the Canadian Refractories Limited and is processed for use as refractory products and to a minor extent for use as a fertilizer material.

"Brucite limestone composed of granules of brucite (magnesium hydroxide) thickly distributed through a matrix of calcite, is quarried near Wakefield, Quebec, by the Aluminum Company of Canada, Limited and is processed for the recovery of magnesia for refractory and fertilizer use, and of hydrated lime for use in construction.

"In May, 1945, the Canadian Refractories Limited, the principal Canadian producer of basic refractory products, was taken over by Harbison Walker Refractories Company of Pittsburgh, U.S.A., and an extensive program of enlargement and modernization of production facilities at the Canadian company's plant is under way. This includes the installation of a sink-float plant, and a 245 foot rotary kiln.

"In February 1945, Canadian Refractories formed a subsidiary company, Dolomite Refractories Limited, at Dundas, Ontario, to produce dead-burned dolomite for use in steel plants, and a large vertical, mixed-feed kiln having a rated capacity of 40 tons of dead-burned dolomite a day was erected and will be in production early in 1946.

"Magnesite deposits occur also in British Columbia and in Yukon, the most important of these being at Marysville, British Columbia, between Cranbrook and Kimberley. They are owned by The Consolidated Mining and Smelting Company of Canada, Limited. Considerable silica and alumina occur as impurities in this magnesite. The company has devised a flotation method to remove the greater part of these impurities, but there has been no commercial production. Other magnesite deposits in British Columbia and Yukon are either of limited extent or are so far from transportation that they are of no commercial importance at present.

"Some deposits of earthy hydromagnesite near Atlin and Clinton in British Columbia, have been worked at various times on a small scale, but there has been no production in recent years.

"In addition to those near Wakefield, there are large deposits of brucite limestone at Bryson, Quebec and at Rutherglen, Ontario, and there is a small deposit on Redonda Island in British Columbia."

Production of magnesitic dolomite (calcined) in Canada was valued at \$1,278,596 in 1945.

Table 336.—Production of Magnesitic Dolomite (Calcined) in Canada, 1931-1945

Year	Tons	Value	Year	Tons	Value
		\$			\$
1931.....	11,411	295,571	1939.....	(a)	474,418
1932.....	(a)	262,860	1940.....	(a)	897,016
1933.....	(a)	360,128	1941.....	(a)	831,041
1934.....	(a)	382,927	1942.....	(a)	(b)1,059,374
1935.....	(a)	486,084	1943.....	(a)	1,260,056
1936.....	(a)	768,742	1944.....	(a)	1,139,281
1937.....	(a)	677,207	1945.....	(a)	1,278,596
1938.....	(a)	(c) 420,261			

(a) Not available for publication. (b) 1942 and following years include the value of brucite shipped.
(c) Represents value of magnesite (dead-burned, etc.) only, whereas the values for years immediately preceding include the value of some end products containing imported material; for this reason the 1938 to 1945 values are not entirely comparable with those for preceding years.

Table 337.—Magnesite and Dolomite Used in the Canadian Primary Iron and Steel Industry, 1931-1945

Year	Calcined Dolomite (b)		Dolomite, crude		Magnesite	
	Short tons	Value	Short tons	Value	Short tons	Value
		\$		\$		\$
1931.....			15,773	76,317	(a)	(a)
1932.....			6,725	32,523	420	14,500
1933.....			6,874	30,557	399	14,798
1934.....			14,748	69,104	2,733	105,072
1935.....			18,394	79,914	3,891	149,987
1936.....			43,562	145,502	6,432	230,656
1937.....			53,066	181,146	8,994	326,091
1938.....			40,540	137,127	9,219	336,811
1939.....	14,858	99,838	40,562	78,904	11,401	351,680
1940.....	21,949	136,360	59,284	123,429	13,673	506,032
1941.....	21,608	160,602	71,087	159,037	18,127	682,742
1942.....	22,550	179,427	79,091	225,393	20,665	786,321
1943.....	10,310	99,740	78,746	243,793	19,427	744,716
1944.....	8,516	125,990	134,907	296,631	18,665	740,450
1945.....	6,146	111,581	110,478	266,236	18,249	755,958

(a) Information not available.
(b) Included with crude dolomite prior to 1939.

Table 338.—Calced Magnesite Used by the Artificial Abrasives and Abrasive Products Industry in Canada, 1933-1945

Year	Tons	Value	Year	Tons	Value
		\$			\$
1933.....	(*)	16,430	1940.....	302	19,331
1934.....	104	6,370	1941.....	809	77,508
1935.....	40	2,448	1942.....	398	58,648
1936.....	418	25,256	1943.....	150	12,164
1937.....	484	29,242	1944.....	771	103,591
1938.....			1945.....	840	96,780
1939.....	121	7,735			

(*) Information not available.

MAGNESIUM SULPHATE

Natural hydrous magnesium sulphate (Epsom Salts or Epsomite) occurs in deposits in lake bottoms or in solution in brine lakes in British Columbia. In Saskatchewan, it is found associated with sodium sulphate. Attempts have been made to produce refined salts, and a number of years ago there was a considerable production from several of the "lakes" in British Columbia. Experimental shipments have been made also from one of the lakes in Saskatchewan.

Canada's output of magnesium sulphate has come chiefly from a deposit in Basque, British Columbia, production from which was discontinued in the autumn of 1942. The salt was refined at Ashcroft, 15 miles south of the deposit, and the grade of the product was high. The refinery, now owned by Ashcroft Salts Company, Limited, had a capacity of 10 tons of salt a day. There are a number of other occurrences in British Columbia, near Clinton, north of Kamloops, and in Kruger's Pass, south of Penticton.

In Saskatchewan two lakes south of Wiseton contain brines high in magnesium sulphate, and Muskiki Lake, just north of Dana, contains brine high in magnesium and sodium sulphates, which at certain times of the year crystallizes into a bedded deposit with layers of both salts.

In the chemical industries, Epsom salt has many uses. It is employed for tanning and in dyeing, and for textile and medicinal use. Magnesium sulphate is used in the paper industry for weighting paper. In the sole leather industry it is used to obtain a clean shiny cut, and it also helps to retain moisture in the leather and increases its weight. Magnesium salt is used to a small extent in the dyeing industry. In some cases it is used in the treatment of leather to increase the fastness of the colour in washing. It is used extensively and in large quantities in medicine and for various purposes in the manufacture of textiles. In bleaching wool, magnesium sulphate is added to destroy the corrosive effect of sodium peroxide. It is also used for weighting textile fabric, especially silk. Mixed with gypsum and ammonium sulphate, it is used in the manufacture of non-inflammable fabrics.

Imports of magnesium sulphate in 1945 was 2,545 tons valued at \$101,695 compared with 2,684 tons worth \$108,795 in 1944.

When magnesium sulphate is not being made in Canada, imports are dutiable at the rate of 17½ per cent, otherwise the duty is 20 per cent. The tariff on the material entering the United States is ¾ cent per pound, or \$15 per ton.

Table 339.—Production of Natural Magnesium Sulphate in Canada(*), 1935-1945

Year	Tons	Value	Year	Tons	Value
		\$			\$
1935.....	340	7,965	1941.....	265	7,343
1936.....	654	13,712	1942.....	1,140	38,760
1937.....	727	14,456	1943.....		
1938.....	470	9,400	1944.....		
1939.....	550	9,900	1945.....		
1940.....					

(*) Produced entirely in British Columbia.

Table 340.—Imports of Magnesium Sulphate into Canada, 1939-1945

Year	Tons	Value	Year	Tons	Value
		\$			\$
1939.....	1,951	56,648	1943.....	3,379	137,372
1940.....	2,211	86,090	1944.....	2,684	108,795
1941.....	2,729	109,022	1945.....	2,545	101,695
1942.....	1,688	68,532			

Table 341.—Consumption of Magnesium Sulphate in Canada, 1939-1945

Industry	1939	1940	1941	1942	1943	1944	1945
	Tons	Tons	Tons	Tons	Tons	Tons	Tons
Leather tanneries.....	570	823	752	891	935	932	1,013
Medicinals.....	344	462	968	539	577	562	.....
Fertilizers.....	945	90	200	790	.....	54	431
Textiles.....	125	155	303	55	330	350	Not
Miscellaneous.....	Not available	.....	.....	46	60	119	available
Total accounted for.....	1,984	1,530	2,223	2,321	1,902	2,017	1,444

NATURAL MINERAL WATERS

Production of natural mineral waters in past years originated in Ontario and Quebec. Some of the more prominent Canadian mineral waters possessing special therapeutic or hygienic properties include the following: in Quebec, the Abenakis springs on the St. Francois river in Yamaska county; Pottou Springs in Brome county and the Colombia springs at L'Epiphanie. In Ontario, saline, sulphur and gas springs occur at Caledonia Springs and at Carlsbad Springs, near Ottawa; the waters range from alkaline to strongly saline. St. Catharines, near Niagara, is one of the oldest Canadian mineral water resorts and sulphur waters are found at the Preston mineral springs in Waterloo county. The most famous of all Canadian springs is undoubtedly the group of hot sulphur springs at Banff, Alberta. In British Columbia the Harrison Hot Springs in Fraser Valley and the Halcyon Hot Springs on Arrow Lake are noted for their curative properties.

There were 18 firms reporting production of natural mineral waters in the Dominion in 1945. Fifteen of these firms were in Quebec and 3 in Ontario.

Table 342.—Shipments of Natural Mineral Waters from Canadian Springs, 1931-1945

Year	Quebec		Ontario		Canada	
	Imp. gal.	\$	Imp. gal.	\$	Imp. gal.	\$
1931.....	19,868	4,746	197,540	8,578	217,408	13,324
1932.....	15,506	4,697	61,298	2,473	76,714	7,170
1933.....	9,024	3,094	29,794	2,347	38,818	5,441
1934.....	75,665	16,116	21,775	1,622	97,440	17,738
1935.....	126,616	15,113	19,990	1,477	146,516	16,590
1936.....	131,186	17,399	23,100	1,117	154,286	18,516
1937.....	198,319	19,697	26,700	889	225,019	20,586
1938.....	159,893	19,033	28,416	2,586	188,309	21,619
1939.....	104,629	17,033	19,140	1,602	123,769	19,105
1940.....	109,025	18,466	31,638	2,426	140,663	20,892
1941.....	144,441	58,062	36,623	14,469	181,064	72,531
1942.....	129,062	60,316	28,023	14,189	157,085	74,505
1943.....	125,605	61,793	14,096	5,748	139,611	67,541
1944.....	148,965	88,113	7,185	805	156,150	88,918
1945.....	236,476	148,714	8,285	976	244,761	149,690

PHOSPHATE

(From the annual review by the Bureau of Mines, Ottawa)

"Canada produces minor amounts of apatite, as phosphate mineral, from pyroxenitic rocks of the Ottawa region in Quebec and Ontario. In such rocks, apatite is frequently associated with phlogopite mica and sometimes phosphate is produced as a by-product of mica mining. Mining for straight apatite was most active between 1878 and 1894, when there was a considerable phosphate industry, centred mainly in the Lievre River, Templeton area, Quebec. Substantial reserves probably exist in some of the larger deposits, but the bodies tend to be erratic and pockety, and are incapable of supplying more than a small fraction of the domestic requirements, which in 1945 totalled over 300,000 short tons.

"Sedimentary phosphate rock occurs along the Rocky Mountain Divide, notably in the vicinity of Crow's Nest, but the material is considered too low grade to be of present economic interest.

"All the shipments in 1945 were from the Brazeau mine, operated by R. Bigelow, the High Rock mine, operated by O. C. Cote; and the Phosphate King mine near Perkins, operated by Messrs. Blackburn Bros. The three properties are in Papineau county.

"In Ontario, Ontario Phosphate Industries, Limited, continued development work on its MacLaren property in Bedford township until the end of September, but made no shipments. Previous development work and that in 1945 included a diamond-drilling program; the sinking of a 3-compartment to a depth of 150 feet; and about 500 feet of drifting and cross-cutting.

"Phosphate is used chiefly for the manufacture of fertilizer. Ordinary superphosphate, made by treatment of phosphate rock with sulphuric acid, is the chief product made, but triple superphosphate, ammonium phosphate, and other compounds of higher P_2O_5 content are produced on an important scale. Production of phosphoric acid by furnace treatment of rock has been increasing steadily, and permits the use of low-grade material that would be uneconomic to acidulate. Thermal defluorination of phosphate rock and superphosphate has also shown a marked increase in order to meet deficiencies of bone-meal and other fluorine-free phosphatic materials for stock-feed use. Phosphate rock is the sole commercial source of phosphorus.

"Overall average price of the United States production in the first half of 1945 was \$4.02 per ton. Average declared spot value of the phosphate rock imported into Canada in 1945 was \$4.55 per short ton. The price paid in 1945 for Canadian apatite delivered at plant was \$16 per short ton for material of 80 per cent grade, with a penalty or premium of 20 cents per unit below or above that figure."

Production (shipments) of phosphate rock in Canada during 1945 amounted to 299 tons valued at \$4,356.

Table 343.—Production of Phosphate in Canada, 1929-1945

Year	Short tons	\$	Year	Short tons	\$
1929.....	1,185	5,380	1938.....	208	1,886
1930.....	40	760	1939.....	157	1,712
1931.....			1940.....	358	4,039
1932.....	1,316	12,333	1941.....	2,487	33,376
1933.....	2,214	5,475	1942.....	1,264	17,431
1934.....	81	683	1943.....	1,451	18,385
1935.....	186	1,103	1944.....	482	6,716
1936.....	525	4,927	1945.....	299	4,356
1937.....	100	900			

Table 344.—Imports of Phosphate Rock into Canada, Calendar Years 1935-1945

Year	Tons	Value	Year	Tons	Value
		\$			\$
1935.....	63,514	234,580	1941.....	237,029	863,833
1936.....	83,474	298,179	1942.....	271,373	1,053,229
1937.....	113,971	453,599	1943.....	260,846	1,085,080
1938.....	128,409	455,697	1944.....	388,247	1,710,378
1939.....	124,900	477,317	1945.....	317,695	1,450,580
1940.....	165,858	663,554			

Table 345.—Consumption of Phosphate Rock in Canada, 1944 and 1945

	1944	1945
(a) By Uses		
Fertilizers.....	337,632	365,195
Chemicals.....	46,941	26,804
Steel furnaces.....	1,032	1,895
Refractories.....	110	154
Total.....	385,715	394,048
(b) By PROVINCES		
Quebec.....	114,287	93,751
Ontario.....	71,120	69,060
British Columbia.....	200,308	231,237
Total.....	385,715	394,048

SILICA BRICK

The manufacture of silica brick for refractory use was confined to the plants of the Dominion Steel and Coal Company, Limited, Sydney, Nova Scotia, and the Algoma Steel Corporation Limited, Sault Ste. Marie, Ontario. The brick manufactured by both these firms are processed from crushed silica rock and are utilized in furnace construction and repairs.

Table 346.—Production of Silica Brick in Canada, 1928-1945

Year	M	\$	Year	M	\$
1928.....	3,224	155,502	1937.....	3,744	181,126
1929.....	3,951	173,581	1938.....	1,788	100,403
1930.....	2,418	97,379	1939.....	2,493	124,807
1931.....	900	35,746	1940.....	3,438	182,786
1932.....	93	4,304	1941.....	4,111	238,433
1933.....	636	23,185	1942.....	4,273	263,006
1934.....	2,528	85,945	1943.....	4,165	295,505
1935.....	2,461	96,194	1944.....	3,997	312,092
1936.....	2,393	97,285	1945.....	4,208	317,263

Quantities are shown as (9" equivalent).

SODIUM CARBONATE

Deposits of natural sodium carbonate in the form of "Natron" (sodium carbonate with 10 molecules of water) and of brine occur in a number of small "lakes" throughout the central part of British Columbia, chiefly in the Clinton Mining Division and in the neighborhood of Kamloops. As the deposits are far from the main eastern Canadian markets, production is restricted to the requirements of consumers within economical rail haul.

Sodium carbonate has many industrial uses, notably in the manufacture of glass and soap, in the purification of oils, in the production of aluminum, in the flotation of minerals, in the refining of metals, and in the production of caustic soda.

Production of sodium carbonate (natural) for 1945 was 286 tons valued at \$3,146.

Imports of sodium carbonate (soda ash) in 1945 were 2,229 tons valued at \$91,655 compared with 20,141 tons valued at \$583,653 in 1944.

Table 347.—Production of Sodium Carbonate (Natural) in Canada, 1931-1945

Year	Tons	\$	Year	Tons	\$
1931.....	712	7,351	1939.....	300	2,400
1932.....	495	5,450	1940.....	220	1,760
1933.....	559	5,773	1941.....	186	1,488
1934.....	244	1,920	1942.....	256	2,048
1935.....	242	2,430	1943.....	468	5,148
1936.....	192	1,677	1944.....	44	484
1937.....	286	2,574	1945.....	236	3,146
1938.....	252	2,268			

SODIUM SULPHATE (NATURAL)

(From the annual review of the Bureau of Mines, Ottawa)

"Sodium sulphate occurs as crystals or in the form of highly concentrated brines in many lakes and deposits throughout western Canada. From these, hydrated sodium sulphate, known as Glauber's salt, and anhydrous sodium sulphate, known to the trade as "salt cake", are produced in Canada.

"Investigations of the sodium sulphate deposits in western Canada were made by the Mines Branch, predecessor organization of the Bureau of Mines, Ottawa, in 1921, and over 120,000,000 tons of hydrous salts were proved in the few deposits examined in detail. The material is in the form of the hydrous salt (mirabilite or Glauber's salt) which contains 55.9 per cent of water of crystallization that is removed before marketing. For the small amount of the hydrous product that is marketed as such, clean crystals are harvested and stock-piled, after which they are screened to various sizes, bagged and shipped.

"Anhydrous sodium sulphate is also obtained as a by-product from the manufacture of hydrochloric acid and as a by-product from the viscose industry. The latter source of supply is likely to increase rapidly as the demand for the other products of the viscose industry expands. Thus, unless the anhydrous material from western Canada can be made of such a high degree of purity that consumers will be willing to pay a premium based on the sodium sulphate content, it will be unable to compete in the export market with the by-product material.

"Glauber's salt is used widely in the chemical industries and the demand is increasing. Sodium sulphate is used chiefly in the sulphate process for the manufacture of kraft pulp; and large amounts are used at Copper Cliff in the smelter. It is used in the glass, dye and textile industries and to a smaller extent for medicinal purposes, and for tanning.

"The price of natural sodium sulphate from the deposits in western Canada in 1945 was quoted at \$8.50 per short ton in carload lots f.o.b. plant. The delivered price at pulp mills, which are mostly distant from producing centres, is considerably higher."

The production of natural sodium sulphate in Canada in 1945 amounted to \$93,068 tons valued at \$884,322. About 16,000 tons were exported.

Table 348.—(*)Principal Statistics of Sodium Sulphate Mining Industry, 1944 and 1945

	1944	1945
Active firms.....No.	5	5
Producing plants.....No.	6	5
Salaried employees.....No.	17	25
Wage-earners.....No.	141	131
Total Employees.....No.	158	156
Salaries.....\$	31,007	31,072
Wages.....\$	232,997	231,297
Total Salaries and Wages.....\$	264,004	262,369
Gross value of production.....\$	987,842	884,322
Cost of fuel and electricity.....\$	253,043	226,109
Cost of process supplies.....\$	39,722	27,473
Net Value of Production.....\$	695,077	630,740

(*) Data included with those shown in Tables 33-36.

Table 349.—Production of Natural Sodium Sulphate(*) in Canada, 1930-1945

Year	Short tons	\$	Year	Short tons	\$
1930.....	31,571	293,847	1938.....	63,009	553,307
1931.....	44,957	421,067	1939.....	71,485	628,151
1932.....	22,466	271,736	1940.....	94,260	829,589
1933.....	50,080	465,416	1941.....	115,608	931,554
1934.....	66,821	587,986	1942.....	131,258	1,079,692
1935.....	44,817	343,764	1943.....	107,121	1,025,151
1936.....	75,598	552,681	1944.....	102,421	987,842
1937.....	79,804	617,548	1945.....	93,068	884,322

(*) All produced in the province of Saskatchewan with the following exceptions:—
Includes production in: Alberta—1937—80 tons, value \$480.
 1938—89 tons, value \$1,127.
 1939—10 tons, value \$186.
 1940—10 tons, value \$50.
 1941— 8 tons, value \$32.

Table 350.—Production in Canada of Manufactured Sodium Sulphate, 1937-1945

Year	Salt Cake		Glauber's Salt	
	Tons	\$	Tons	\$
1937.....	3,746	53,244	3,203	52,658
1938.....	2,955	42,049	2,464	39,935
1939.....	2,661	40,219	3,189	52,331
1940.....	4,100	61,567	4,425	82,969
1941.....	5,191	83,991	3,372	64,203
1942.....	4,945	68,377	914	18,761
1943.....	4,256	57,526		
1944.....	3,758	46,077		
1945.....	2,850	35,226		

Table 351.—Imports into Canada of Sodium Sulphate, 1937-1945

Year	Salt Cake		Glauber's Salt	
	Tons	\$	Tons	\$
1937.....	14,117	132,352	1,706	25,000
1938.....	5,786	61,122	2,266	20,288
1939.....	6,542	73,575	1,330	20,102
1940.....	8,295	94,674	543	12,450
1941.....	7,819	105,502	250	8,244
1942.....	7,070	85,479	75	4,664
1943.....	11,904	150,496	566	15,399
1944.....	20,460	195,105	777	21,960
1945.....	13,535	120,982	1,016	29,452

Table 352.—Available Data on Consumption of Sodium Sulphate (Salt Cake) in Canada, 1940-1945

	1940	1941	1942	1943	1944	1945
	Tons	Tons	Tons	Tons	Tons	Tons
Pulp and paper.....	53,540	61,679	70,078	67,292	70,954	67,654
Non-ferrous smelters.....	27,562	28,294	21,541	33,385	37,079	30,000
Heavy chemicals.....	13	10	58	120	934	125
Glass.....	143	556	643	892	770	621
Medicinals.....	8	11	14	38	29	30
Textiles.....	3	10	3			
Tanneries.....	50	21	3			
Soaps.....	9	10	18			
Miscellaneous.....			4			
Total.....	81,317	90,591	92,362	101,737	109,766	98,430

STRONTIUM MINERALS

There was no commercial production of strontium minerals in Canada during recent years. In 1941, 27 tons of celestite valued at \$280 was shipped from old dumps located on lots 6 and 7, concession 10 of Bagot township, Renfrew county, Ontario.

The following, relating to strontium, is from a review prepared by the Bureau of Mines, Ottawa:

"Several occurrences of celestite (strontium sulphate) of possible economic interest are known in Canada, and in 1920-21, some ground material produced from a deposit in Bagot township, Ontario, was sold to the paint trade. The material from this deposit is coarsely-fibrous in character and is not very pure, containing about 18 per cent of barium sulphate. It is accordingly not favoured for chemical use, but is regarded as suitable for paints and general filler or loader use. The old pit was pumped out in 1941 and a few tons of ore were scaled down from a small drift. This, along with some stockpile material, was shipped to Montreal for grinding. The product was used in the paint trade as a substitute for barite, but is reported to have found little favour, and no further work was done. Celestite of similar character and analysis occurs at some of the old fluorspar mines of the Madoc area in Ontario, and part of it might be recoverable from the waste dumps.

"Celestite, analysing 98 to 99 per cent strontium sulphate, occurs as a small vein of coarse platy crystals in Lansdowne township, Ontario, and some of it was mined many years ago.

"World production of strontium minerals is estimated at 5,000 to 7,000 tons a year. England is the principal source of supply, with Germany next. The United States produced about 350 tons in 1940, exclusive of celestite used for oil-drilling. Important deposits are reported to occur in India and Newfoundland, but there has been no production from these sources as yet.

"Celestite is the principal source of strontium used in the manufacture of the various strontium salts, and strontianite a less common mineral, is used for the same purpose. The nitrate, carbonate, and hydrate are the most important of the strontium compounds used in industry and medicine. Strontium nitrate is employed mainly in pyrotechnics, for fireworks, railroad signal flares, and military flares and rockets to which it imparts the characteristic strong red flame colour of the element. Other strontium compounds are employed in tracer bullets and shells. The hydrate is used chiefly in the refining of beet sugar by the Scheibler process. In North America, however, sugar is refined mainly by the Steffens, or lime, process. The carbonate is reported to be used to some extent as a batch ingredient in the manufacture of certain kinds of glass, glazes, and enamels, and as a fluxing and desulphurizing and dephosphorizing agent in iron and steel. Strontium chloride powder finds limited use in refrigerators working on the solid absorption principle. Ground celestite is used in fairly large quantities for purifying caustic soda in the rayon industry, and some impure material has been ground and employed as a barite substitute for weighting oil-drilling muds. Interest has also been shown in the possibilities of the carbonate and the sulphate in glass and white wares.

"Strontium metal, made from either the natural sulphate or carbonate, is used in limited quantities in certain alloys, mainly of copper, tin, lead, zinc, and cadmium."

VOLCANIC DUST

(From the annual review by the Bureau of Mines, Ottawa)

"Volcanic dust (pumicite or pumice dust) is a natural glass or silicate, atomized by volcanic explosions and thrown into the air in great clouds which ultimately settle, forming beds of varying thickness, often hundreds of miles from its source. In many instances the dust has been washed down from higher levels and redeposited by the agency of waters, in which case the beds are stratified and mixed with foreign substances. It consists of aluminum silicate (80 to 90 per cent), and of oxides and silicates of iron, sodium, magnesium, calcium, etc.

"Deposits of volcanic dust occur in Saskatchewan, Alberta, and British Columbia. There was no production in 1944 and 1945. In 1943 about 60 tons was shipped from Rock Glen, 125 miles southeast of Swift Current, Saskatchewan. A lease was taken out recently on the Duncuirn deposit near Swift Current and samples of cleanser material were distributed.

"The United States is the largest consumer of volcanic dust and pumice, and has an annual output of about 90,000 tons valued at over \$700,000. The material is used mainly in scouring and cleansing compounds and as a concrete admixture and concrete aggregate. To a minor extent it is used for insulation; in glass bevelling; for polishing aluminum; in the manufacture of fire-proof walls; in acoustic plaster; in building tiles; as a filler in paint and in asphalt; and as glazes in ceramics."

SULPHUR (PYRITES)

(From the annual review by the Bureau of Mines, Ottawa)

"Pyrites is produced in Canada as a by-product in the treatment of copper-pyrites ores at Waite-Amulet and Noranda mines in Quebec and at Britannia mine in British Columbia. No lump pyrites has been produced in Canada for several years, and published statistics on recent pyrites production refer to by-product iron pyrites recovered in the concentrating of copper and copper-zinc ores.

"Deposits of native sulphur of commercial grade have not been found in Canada, but sulphur occurs in combination with copper, lead, zinc, nickel, or iron in many base metal sulphide ore-bodies in various parts of the country. In smelting these ores sulphur dioxide gas is produced, and to 1925 this gas was a total waste as no facilities were available for the recovery from it of sulphur or of sulphur compounds. In practice this gas can be used directly for the manufacture of liquid sulphur dioxide or for the production of elemental sulphur. Sulphur used in the making of sulphuric acid is recovered in the form of sulphur dioxide from salvaged gas by The Consolidated Mining and Smelting Company of Canada, Limited, at Trail, British Columbia, and by Canadian Industries Limited at Copper Cliff, Ontario. There has been no production of elemental sulphur in Canada since July 1943.

"In Quebec, Noranda Mines Limited, Noranda, recovers the pyrites from the cyanide mill tailings and sells it to pulp and paper mills at Trois Rivieres and at Hull Quebec, and to chemical plants in Canada and the United States. Waite-Amulet Mines, Limited, has been producing a pyrite concentrate since March 1944, which it ships mainly to the United States.

"In British Columbia, most of the large output of pyrites from the Britannia mine of Britannia Mining and Smelting Company, Limited, at Britannia Beach, was sold to Nichols Chemical Company's acid plant at Barnet, British Columbia, and the remainder was exported to Compagnie des Boleo in Mexico. The pyrites averaged over 50 per cent in sulphur. A considerable tonnage from operations in previous years has accumulated for disposal when market conditions are more favourable. The property of Northern Pyrites, Limited, at Ecstall River, about 60 miles south of Prince Rupert, remained idle. Reserves are estimated at 5,000,000 tons with a sulphur content of 45 per cent.

"By July 1943, the demand for sulphuric acid for fertilizer manufacture had become so great that the production of elemental sulphur at Trail, which was commenced in 1936, was discontinued. The sulphuric acid is made in a plant using the contact process, that was erected by The Consolidated Mining and Smelting Company in 1929. Canadian Industries Limited also uses the contact process in its acid plant at Copper Cliff, the production of sulphuric acid being from converter gas that is withdrawn from the flues by arrangement with The International Nickel Company of Canada, Limited. The acid is marketed in several industries."

Table 353.—Imports of Sulphur (Brimstone) into Canada, 1937-1945

Year	Tons	\$
1937	225,684	3,669,082
1938	93,647	1,471,741
1939	152,216	2,453,836
1940	215,597	3,628,348
1941	235,271	3,920,184
1942	290,121	4,680,672
1943	218,527	3,524,006
1944	235,955	3,875,649
1945	248,846	4,063,324

Table 354.—Available Data on the Consumption of Sulphur (Brimstone) in Canada, 1942-1945

Industry	1942	1943	1944	1945
	(tons of 2,000 pounds)			
Pulp and paper.....	211,466	206,785	195,203	203,522
Heavy chemicals.....	70,037	69,236	68,649	53,689
Rubber goods.....	1,830	1,412	1,259	1,496
Explosives.....	2,653	1,806	1,753	1,131
Insecticides.....	1,293	1,246	1,228	1,244
Adhesives.....	60	93	495	75
Starch.....	200	270	240	253
Fruit and vegetable preparations.....	36	215	156	123
Sugar refining.....	147	104	108	130
Petroleum refining.....	155	47	51	51
Matches.....	79	76	75	89
Miscellaneous.....	971	3,828	670	600
Total Accounted For.....	288,927	285,118	269,887	262,403

Table 355.—Production of Sulphur(*) in Canada for Years Specified

Year	Tons	\$	Year	Tons	\$
1886.....	(a) 42,906	193,077	1928.....	(b) 38,589	321,033
1896.....	13,823	101,155	1929.....	42,781	350,843
1906.....	17,525	169,990	1930.....	37,730	314,835
1913.....	65,012	521,181	1931.....	50,107	429,457
1914.....	93,609	744,508	1932.....	53,172	470,014
1915.....	116,157	985,190	1933.....	57,373	510,299
1916.....	116,975	1,084,095	1934.....	51,537	515,502
1917.....	155,453	1,610,762	1935.....	67,446	634,235
1918.....	154,269	1,705,219	1936.....	122,132	1,033,055
1919.....	65,674	522,704	1937.....	130,913	1,154,992
1920.....	67,608	719,110	1938.....	112,395	1,044,817
1921.....	12,213	116,326	1939.....	211,278	1,668,025
1922.....	6,900	74,303	1940.....	170,630	1,298,018
1923.....	11,073	113,020	1941.....	260,023	1,702,786
1924.....	9,742	95,620	1942.....	303,714	1,994,891
1925.....	7,587	58,899	1943.....	257,515	1,753,425
1926.....	8,975	63,899	1944.....	248,088	1,755,739
1927.....	25,229	198,388	1945.....	250,114	1,881,321

(*) Sulphur in iron pyrites shipped plus sulphur recovered from non-ferrous smelter gases.

(a) Tonnage of pyrites shipped.

(b) 1928-1945 includes sulphur recovered from smelter gas.

Table 356.—Production in Canada of Pyrites with Sulphur Content, Including Sulphur Contained in Sulphuric Acid, etc., Made from Smelter Gases, 1943-1945

	Pyrites (*)			Smelter Gas		Total Sulphur	
	Sales	Sulphur content		Sulphur content		Tons	Value
	Tons	Tons	Value	Tons	Value		
1943			\$		\$		\$
Quebec.....	277,690	136,007	545,229	16,907	169,070	136,007	545,229
Ontario.....				101,159	1,011,590	16,907	169,070
British Columbia.....	6,886	3,442	27,536			104,601	1,039,126
Canada.....	284,576	139,449	572,765	118,066	1,180,660	257,515	1,753,425
1944							
Quebec.....	240,370	116,887	453,501			116,887	453,501
Ontario.....				17,876	178,760	17,876	178,760
British Columbia.....	9,701	4,886	39,088	108,439	1,084,390	113,225	1,123,478
Canada.....	250,071	121,773	492,589	126,315	1,263,150	248,088	1,755,739
1945							
Quebec.....	218,628	105,613	445,534			105,613	445,534
Ontario.....				16,847	168,470	16,847	168,470
British Columbia.....	9,095	4,590	36,677	123,064	1,230,640	127,654	1,267,317
Canada.....	227,723	110,203	482,211	139,911	1,399,110	250,114	1,881,321

(*) Recovered from copper ore deposits.

(†) Includes any elemental sulphur and sulphur in sulphuric acid and direct ammonium sulphate.

CHAPTER NINE

CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS

Including Cement, Clay and Clay Products (Brick, Drain Tile, Kaolin, Sewer Pipe, Structural Tile, Stoneware and Pottery made from Domestic Clays, Fireclay, Firebrick, Fireclay Blocks and Shapes, Imported Clay Products), Lime, Sand and Gravel, Sand-Lime Brick, and Stone, including Slate.

Grouped in this Chapter are those industries producing structural materials from non-metallic minerals, rocks and clays of Canadian origin. These industries include those firms engaged in the production of Clay Products, Portland Cement, Lime, Sand, Gravel and Stone. The combined value of these materials produced in Canada during 1945 totalled \$48,419,673 compared with \$42,984,937 in 1944. Of the 1945 output, Ontario contributed \$17,437,552 and Quebec \$17,051,353 or 36.0 per cent and 35.2 per cent respectively. In order of importance, lesser amounts were also produced in British Columbia, Alberta, Manitoba, New Brunswick and Nova Scotia.

The quality of structural materials produced in Canada compares favourably with that of other countries. Most of the larger plants producing cement, clay products, lime, stone and sand and gravel are equipped with modern machinery and the Dominion is endowed with practically inexhaustible deposits of most primary materials required in any building or construction project of the future.

There has been an increasing consumption of stone and lime for other than building purposes. This has been particularly evident in recent years and is the result of expansion in certain industries where these materials are utilized in various chemical processes. Shipments of stone and lime for these purposes are classified, for convenience, with data relating to production of these same materials for structural purposes. However, statistics pertaining to their consumption for industrial purposes are segregated in the following tables.

Table 357.—Gross Value of Clay Products and Other Structural Materials Produced in Canada, by Provinces, 1939-1945

Province	1940	1941	1942	1943	1944	1945
	\$	\$	\$	\$	\$	\$
Nova Scotia.....	1,855,771	1,330,888	1,980,912	1,597,791	1,081,805	1,310,214
New Brunswick.....	936,161	1,145,412	1,305,343	911,121	1,644,047	1,497,688
Quebec.....	15,001,749	16,631,657	17,723,293	15,863,115	15,085,337	17,628,154
Ontario.....	16,636,844	18,652,999	16,557,804	15,414,525	16,088,455	17,872,222
Manitoba.....	2,600,304	2,197,095	2,317,933	2,402,647	2,648,430	3,350,115
Saskatchewan.....	906,181	631,732	707,123	932,412	864,082	834,564
Alberta.....	2,971,550	2,626,277	2,836,160	2,752,839	3,149,234	3,398,323
British Columbia.....	2,795,389	3,416,996	3,564,405	3,246,623	3,573,857	3,911,254
Canada—Gross value.....	43,793,949	46,633,056	46,992,973	43,121,073	44,135,247	49,802,534
Net value.....	34,893,571	35,865,916	35,334,369	32,464,633	32,916,190	37,885,652

Gross value includes cement containers.

Net value—Deductions made for fuel, electricity, process supplies and containers.

NOTE: For statistics relating to employment, etc., in these combined industries, see Chapter 1.

THE CEMENT MANUFACTURING INDUSTRY

Shipments of Portland cement by Canadian producers amounted to 8,471,679 barrels valued at \$14,246,480 in 1945, an increase of 18 per cent in quantity and 23 per cent in value over the 1944 shipments of 7,190,851 barrels at \$11,621,372. Production by provinces in 1945 was as follows: Quebec 3,872,273 barrels; Ontario 2,460,996 barrels; Manitoba 959,398 barrels; Alberta 620,337 barrels, and British Columbia 558,575 barrels.

The same 8 plants were in operation during 1945 as in the previous year. The Canada Cement Company Limited had works at Hull and Montreal East in Quebec, at Port Colborne

and Belleville in Ontario, at Fort Whyte in Manitoba, and at Exshaw in Alberta. The St. Mary's Cement Company operated a mill at St. Mary's, Ontario, and the British Columbia Cement Company had a plant at Bamberton, British Columbia. These mills had 19 kilns with total rated capacity of 33,250 barrels per day. Raw materials used in 1945 included 70,600 tons of shale, 1,849,258 tons of limestone, 45,883 tons of gypsum, 29,424 tons of silica sand, 161,980 tons of clay and 3,197 tons of pyrite cinder. There is also one plant in Canada, operated by Medusa Products Company of Canada Limited at Paris, Ontario, which makes white Portland cement, cement paints, etc., but since this works uses imported clinker it's operations have not been included in this review, which is concerned only with the establishments which operate on domestic raw materials.

An average of 1,317 workers were employed in this industry in 1945 and salaries and wages totalled \$2,398,117. Raw materials, process supplies and containers cost \$2,794,676, fuel and electricity cost \$3,210,929, and the gross value of shipments, f.o.b. works, including containers, was \$15,422,031.

Imports of ordinary Portland cement into Canada amounted to 32,653 barrels valued at \$141,539, and the imports of white Portland cement clinker totalled 16,728 barrels at \$35,023. Exports of Portland cement in 1945 amounted to 281,944 barrels at \$535,012.

Table 358.—Principal Statistics for the Cement Manufacturing Industry in Canada, 1936-1945

Year	Plants	Employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies, materials and containers (*)	Gross value of products sold during year, including containers (f.o.b. works)
	Number	Number	\$	\$	\$	\$
1936.....	9	1,052	1,196,664	1,576,142	592,929	(*) 6,908,192
1937.....	9	1,083	1,373,444	1,904,418	540,915	(*) 9,095,867
1938.....	8	1,034	1,306,331	1,764,427	1,369,173	9,081,366
1939.....	8	1,001	1,297,542	1,705,981	1,372,238	9,351,391
1940.....	8	1,052	1,515,766	2,347,730	1,943,491	13,006,643
1941.....	8	1,235	1,860,931	2,897,383	2,146,825	14,323,372
1942.....	8	1,241	2,059,337	3,127,264	2,287,223	15,628,403
1943.....	8	1,209	2,154,218	3,089,380	2,467,709	12,709,852
1944.....	8	1,207	2,254,775	3,197,955	2,566,432	12,646,741
1945.....	8	1,317	2,398,117	3,210,929	2,794,676	15,422,031

(*) Includes only process supplies for 1936 and 1937; both process supplies and containers for 1938 to 1942 inclusive; and process supplies, containers, and raw materials for later years.

Table 359.—Production, Imports and Exports of Portland Cement, 1944 and 1945

	1944		1945	
	Barrels (*)	Value	Barrels (*)	Value
		\$		\$
Output.....	7,601,007		7,819,412	
Shipments (sold or used by producers).....	7,190,851	11,621,372	8,471,679	14,246,450
Stocks on hand, December 31.....	2,006,799		1,354,532	
IMPORTS—				
Portland cement and hydraulic or water lime.....	14,004	76,838	32,653	141,539
Portland cement clinker (white).....	9,872	21,130	16,728	35,023
Manufactures, n.o.p.....		21,128		31,306
EXPORTS—				
Portland cement.....	210,449	377,434	281,944	535,012
Apparent Consumption.....	(†) 6,994,406		(†) 8,222,338	

(*) 1 barrel=350 pounds.

(†) Exclusive of clinker imported.

Table 360.—Producers' Shipments and Apparent Consumption of Cement in Canada, 1930-1945

Year	Shipments (sold or used)		Apparent consumption (*) in Canada
	Barrels	\$	Barrels
1930.....	11,032,538	17,713,067	10,977,238
1931.....	10,161,658	15,826,243	10,085,986
1932.....	4,498,721	6,930,721	4,466,738
1933.....	3,007,432	4,536,935	2,974,020
1934.....	3,783,226	5,667,946	3,727,521
1935.....	3,648,086	5,580,043	3,610,217
1936.....	4,508,718	6,908,192	4,479,656
1937.....	6,168,971	9,095,867	6,157,485
1938.....	5,519,102	8,241,350	5,478,180
1939.....	5,731,264	8,511,211	5,591,328
1940.....	7,559,648	11,775,345	7,272,886
1941.....	8,368,711	13,063,588	8,069,824
1942.....	9,126,041	14,365,237	8,878,481
1943.....	7,302,289	11,599,033	7,148,265
1944.....	7,190,851	11,621,372	6,994,406
1945.....	8,471,679	14,246,480	8,222,388

(*) Shipments plus imports less exports.

Table 361.—Producers' Shipments of Cement in Canada, by Provinces, 1943-1945

Province	1943		1944		1945	
	Barrels	Value (*)	Barrels	Value (*)	Barrels	Value (*)
		\$		\$		\$
Quebec.....	3,394,895	4,899,578	3,249,302	4,736,004	3,872,373	5,985,077
Ontario.....	1,972,009	2,872,732	1,863,210	2,730,381	2,460,996	3,805,131
Manitoba.....	793,913	1,503,416	865,766	1,698,587	959,398	2,027,629
Alberta.....	606,703	1,176,442	699,989	1,370,502	620,337	1,246,346
British Columbia.....	534,769	1,146,865	512,594	1,085,918	558,675	1,182,297
Canada.....	7,302,289	11,599,033	7,190,851	11,621,372	8,471,679	14,246,480

(*) Less value of containers.

Table 362.—Specified Materials Used in Canadian Cement Plants, 1936-1945

Year	Shale	Limestone	Gypsum	Silica sand	Clay	Iron oxides†
	Tons	Tons	Tons	Tons	Tons	Tons
1936.....	(*)	1,180,358	25,447	8,549	94,943	(*)
1937.....	(*)	1,465,168	33,691	9,281	195,877	444
1938.....	13,821	1,344,868	51,975	9,465	143,421	22
1939.....	27,241	1,379,858	31,492	7,942	105,982	16
1940.....	18,347	1,765,944	38,903	15,298	144,152	170
1941.....	26,837	2,086,781	49,031	16,110	185,954	614
1942.....	30,498	2,155,750	49,816	20,711	188,202	2,094
1943 (a).....	(b) 75,460	1,918,742	47,034	19,473	165,345	1,502
1944.....	74,303	1,865,597	42,672	23,942	173,728	3,924
1945 (c).....	70,600	1,849,258	45,883	29,424	161,980	3,197

(*) Data not recorded.

(†) Produced from iron pyrites by the chemical industry.

(a) Value of these materials purchased in 1943 totalled \$408,289.

(b) Prior to 1943 shale consumed in British Columbia plants was included with limestone.

(c) Value of these materials purchased in 1945 totalled \$349,195.

Table 363.—Coal Used in Portland Cement Plants in Canada, 1936-1945

Year	Canadian		Foreign	
	Tons	\$	Tons	\$
1936.....	119,903	635,631	66,460	367,740
1937.....	145,791	760,766	90,925	513,417
1938.....	127,812	656,187	89,172	499,812
1939.....	190,538	1,010,071	16,141	82,336
1940.....	185,325	1,108,287	85,885	513,224
1941.....	125,740	772,829	203,905	1,331,448
1942.....	156,544	1,003,490	192,105	1,305,383
1943.....	98,135	595,385	225,741	1,664,546
1944.....	108,292	731,706	219,802	1,634,690
1945.....	121,299	823,988	206,995	1,566,420

Table 364.—Number and Capacity of Kilns in Portland Cement Plants in Canada, 1936-1945

Year	Total kilns		Kilns in use during the year	
	Number	Total capacity barrels per 24 hours	Number	Total capacity barrels per 24 hours
1936.....	19	33,000	(*)	(*)
1937.....	18	33,900	(*)	(*)
1938.....	21	35,200	10	23,100
1939.....	21	35,000	11	23,700
1940.....	21	35,000	13	27,950
1941.....	20	33,050	16	30,350
1942.....	19	34,650	17	32,450
1943.....	19	33,750	15	30,296
1944.....	19	33,250	15	30,150
1945.....	19	33,250	15	30,150

(*) Data not recorded.

Table 365.—Employees, Salaries and Wages in the Cement Manufacturing Industry in Canada, 1940-1945

Year	Number of employees					Salaries	Wages	Total salaries and wages
	On salaries		On wages		Total			
	Male	Female	Male	Female				
1940.....	79	4	969		1,052	191,548	1,324,218	1,515,766
1941.....	79	8	1,148		1,235	190,771	1,670,160	1,860,931
1942.....	79	10	1,152		1,241	200,779	1,858,558	2,059,337
1943.....	75	16	1,091	27	1,209	215,137	1,939,081	2,154,218
1944.....	76	16	1,066	49	1,207	229,490	2,025,285	2,254,775
1945.....	87	15	1,159	56	1,317	248,365	2,149,752	2,398,117

Table 366.—Wage-Earners in the Cement Manufacturing Industry in Canada, by Months, 1944 and 1945

Month	1944			1945		
	Quarry	Mill		Quarry	Mill	
	Male	Male	Female	Male	Male	Female
January.....	136	903	12	129	942	39
February.....	138	915	11	120	928	30
March.....	139	930	11	122	930	31
April.....	140	940	43	126	928	39
May.....	157	917	64	149	936	72
June.....	141	896	69	151	993	73
July.....	162	941	73	156	1,027	79
August.....	151	936	75	152	1,033	72
September.....	157	895	66	153	1,047	64
October.....	161	911	65	146	1,123	61
November.....	145	927	59	147	1,161	54
December.....	136	908	45	165	1,126	45
Average.....	147	919	49	144	1,015	56

THE CLAY AND CLAY PRODUCTS INDUSTRY, 1945

The industrial clays of Canada may be classified as common clays, stoneware clays, fire-clays and china clays. Statistically, the ceramic industry of Canada is conveniently classified into two divisions: (1) Production from domestic clays, which includes the production of building brick, structural tile, drain tile, roofing tile, stoneware, sewer pipe, pottery and refractories, and (2) production from imported clays, which includes the manufacture of electrical porcelains,

sanitary ware, sewer pipe, table ware, pottery, ceramic floor and wall tile, and various kinds of fireclay refractories. Data relating to the production of glass, cement and artificial abrasives are contained in separate reports.

A total of 134 plants operated in the domestic and imported clay products industries in Canada during 1945. These two industries provided employment for 4,115 persons during the year; their earnings totalled \$5,892,851. The combined production in 1945 was valued at \$14,240,374 compared with \$11,421,990 in 1944.

I. Production from Domestic Clays, 1945

The gross value of Canadian producers' sales of domestic clays and products made from same totalled \$8,913,092 in 1945 compared with \$6,997,425 in 1944. Eight provinces reported the commercial production of domestic clay products. The total value of sales from Ontario was \$3,107,189; Quebec was \$2,534,630 and Alberta was \$1,401,875.

The number of firms reported as active in the Canadian domestic clay products industry during 1945 totalled 106; of these, 48 were located in Ontario, 16 in Quebec, 11 in Alberta, 7 in British Columbia, and the remainder in Nova Scotia, New Brunswick, Manitoba and Saskatchewan. The industry provided employment for 2,688 persons and distributed \$3,828,206 in salaries and wages. Fuel and electricity used in 1945 was valued at \$1,780,426 and process supplies had a value of \$194,257.

Sales of building brick in 1945 amounted to \$4,566,179 for the 200,241 M pieces. This is compared with 154,785 M which sold for \$3,155,380 in 1944. The sewer pipe and drain tile sales were \$1,674,016; hollow blocks and floor tile \$1,044,575; pottery, including earthenware, \$930,567; bentonite \$170,799, and fireclay, firebrick and fireclay blocks \$443,342.

Imports into Canada of clay and various clay products in 1945 were valued at \$13,680,579, compared with \$12,636,557 in the preceding year. Exported from Canada were clay products appraised at \$627,248.

Table 367.—Principal Statistics for the Clay Products Industry in Canada, 1936-1945

Year	Establishments	Employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies	Gross value of products sold during year (f.o.b. works)
			\$	\$	\$	\$
1936.....	140	1,775	1,498,148	695,001	71,353	3,471,027
1937.....	143	2,287	2,094,792	1,032,755	103,568	4,516,859
1938.....	152	2,242	2,110,233	939,190	114,659	4,536,084
1939.....	149	2,165	2,161,688	998,683	108,815	5,151,236
1940.....	143	2,557	2,675,251	1,282,593	139,635	6,344,547
1941.....	142	2,831	3,227,785	1,561,326	207,247	7,575,336
1942.....	124	2,523	3,073,011	1,292,373	155,866	7,081,723
1943.....	105	2,173	2,909,841	1,157,471	104,336	6,608,193
1944.....	110	2,247	3,176,804	1,357,313	161,189	6,997,425
1945.....	106	2,688	3,828,206	1,780,426	194,257	8,913,092

Table 368.—Production (Total Sales) of Clay Products from Domestic Clays, 1930-1945

Year	\$	Year	\$
1930.....	10,593,578	1938.....	4,536,084
1931.....	7,841,288	1939.....	5,151,236
1932.....	3,650,218	1940.....	6,344,547
1933.....	2,262,835	1941.....	7,575,336
1934.....	2,680,410	1942.....	7,081,723
1935.....	3,012,563	1943.....	6,608,193
1936.....	3,471,027	1944.....	6,997,425
1937.....	4,516,859	1945.....	8,913,092

Table 369.—Production (Total Sales) of Clay Products, by Provinces, 1940-1945
(Gross Values)

Province	1940	1941	1942	1943	1944	1945
	\$	\$	\$	\$	\$	\$
Nova Scotia.....	490,543	529,435	618,441	478,571	402,694	433,455
New Brunswick.....	171,745	193,643	246,041	216,446	207,051	232,783
Quebec.....	1,546,246	1,944,358	1,741,297	1,504,428	1,881,791	2,534,630
Ontario.....	2,508,540	3,087,616	2,549,486	2,453,829	2,347,396	3,107,189
Manitoba.....	102,906	84,817	80,890	132,382	197,383	269,917
Saskatchewan.....	164,828	224,897	271,325	348,725	330,907	271,288
Alberta.....	838,856	952,144	1,013,497	978,649	1,143,577	1,401,875
British Columbia.....	520,883	558,426	560,746	495,163	486,626	661,955
Canada.....	6,344,547	7,575,336	7,081,723	6,608,193	6,997,425	8,913,092

Table 370.—Production (Sales) of Domestic Clay and Clay Products in Canada,
1944 and 1945

Product	Unit of measure	Sales or shipments			
		1944		1945	
		Quantity	\$	Quantity	\$
Clay—Bentonite.....	ton	(*)	163,848	(*)	170,799
Fireclay.....	ton	7,630	38,433	4,266	31,416
Kaolin.....	ton	424	5,758	446	3,771
Other clay.....	ton	18,801	92,602	18,242	29,920
Fireclay blocks and shapes.....			221,251		225,275
Firebrick.....	M	3,180	164,837	3,466	186,651
Brick—Soft mud process: Face.....	M	7,917	177,659	5,424	128,762
Common.....	M	14,182	214,336	21,516	378,884
Stiff mud process (wire cut): Face.....	M	55,175	1,360,083	76,094	2,074,833
Common.....	M	44,451	742,437	51,413	940,266
Dry press: Face.....	M	13,990	337,715	25,680	636,721
Common.....	M	18,809	317,893	19,993	400,091
Fancy or ornamental brick (including special shapes, embossed and enamelled brick).....	M	28	866	81	5,806
Sewer brick.....	M	233	4,391	41	816
Paving brick.....	M	321	18,793	206	12,010
Structural tile—					
Hollow blocks (including fireproofing and load-bearing tile).....	ton	87,820	811,558	94,244	998,210
Floor tile (quarries).....			43,817		46,365
Drain tile.....	M	13,684	425,725	13,393	485,875
Sewer pipe (including copings, flue linings, conduits, etc.).....			964,732		1,178,141
Pottery, glazed or unglazed (including coarse earthenware, sanitary ware, stoneware, flower pots, and all other pottery).....			838,544		930,567
Other products.....			52,147		37,913
Total.....			6,997,425		8,913,092

(*) Not published.

In addition to the clays recorded in the above table, there were 161,980 tons of ordinary clay consumed in Canada during 1945 in the production of Portland Cement; the corresponding consumption in 1944 was 165,345 tons. Also consumed by the Canadian cement industry in 1945 were 70,600 tons of shale.

Table 371.—Production (Sales) of Building Brick (a)—Dominion Totals for Years Specified, 1905-1945

Year	M	\$	Average value per M (b)	Year	M	\$	Average value per M (b)
			\$				\$
1905 (*).....	523,820	3,933,925	7.51	1936.....	115,732	1,748,772	15.11
1914.....	551,149	4,769,417	8.65	1937.....	153,770	2,375,276	15.45
1927.....	398,439	6,941,131	17.42	1938.....	148,807	2,341,443	15.73
1928.....	421,301	7,281,777	17.28	1939.....	165,024	2,676,634	16.22
1929.....	458,630	8,093,358	17.45	1940.....	191,213	3,277,187	17.14
1930.....	319,838	5,581,501	17.45	1941.....	208,871	3,765,493	18.00
1931.....	237,143	4,289,119	18.09	1942.....	169,317	3,018,375	17.83
1932.....	100,477	1,779,334	17.71	1943.....	138,678	2,808,764	20.25
1933.....	67,700	1,124,517	16.61	1944.....	154,785	3,155,380	20.38
1934.....	86,072	1,383,929	16.08	1945.....	200,241	4,566,179	22.82
1935.....	100,538	1,555,167	15.47				

(a) Totals comparable with those in Table 12.

(b) Based on shipments of all grades and the value per M should be interpreted as the value of pressed, common and other varieties "en masse" and not the value of any one particular type of brick.

(*) Quantity not recorded prior to 1905.

Table 372.—Production (Sales) of Building Brick(*) in Canada, by Provinces, 1943-1945

Province	1943		1944		1945	
	M	\$	M	\$	M	\$
Nova Scotia.....	6,411	108,963	5,987	96,411	6,827	110,065
New Brunswick.....	6,856	121,359	6,407	109,983	7,895	166,104
Quebec.....	52,428	976,370	65,103	1,303,666	82,319	1,806,738
Ontario.....	56,389	1,381,796	56,654	1,323,651	74,446	1,944,365
Manitoba.....	1,546	21,954	1,566	37,115	4,212	100,366
Saskatchewan.....	296	5,358	536	9,230	753	15,820
Alberta.....	12,026	130,534	15,590	197,940	19,377	292,350
British Columbia.....	2,726	62,430	2,942	77,384	4,412	130,371
Canada.....	138,678	2,808,764	154,785	3,155,380	200,241	4,566,179
Average value per M.....		20.25		20.38		22.82

(*) Includes fancy and sewer brick.

Table 373.—Value(*) of Drain Tile and Sewer Pipe Produced (Sales) in Canada from Domestic Clays, by Provinces, 1942-1945

Province	1942	1943	1944	1945
	\$	\$	\$	\$
Nova Scotia.....	351,053	233,757	165,106	178,587
New Brunswick.....	(†) 4,448	7,346	5,269	3,495
Quebec.....	230,128	209,832	206,338	231,208
Ontario.....	644,631	628,447	621,326	692,873
Manitoba.....				
Saskatchewan.....		5,625	3,400	4,050
Alberta.....	343,141	281,008	253,679	357,920
British Columbia.....	148,179	141,208	135,339	205,883
Canada.....	1,721,580	1,507,223	1,390,457	1,674,016

(*) Includes value of copings, flue linings, etc.

(†) Drain tile only.

Table 374.—Value(*) of Drain Tile and Sewer Pipe Produced in Canada for Years Specified

Year	Value	Year	Value	Year	Value
	\$		\$		\$
1914.....	1,470,839	1928.....	2,379,698	1939.....	1,167,181
1916.....	1,075,674	1929.....	2,726,203	1940.....	1,430,154
1918.....	1,199,114	1931.....	1,837,213	1941.....	1,755,753
1920.....	2,111,742	1933.....	577,287	1942.....	1,721,580
1922.....	2,173,733	1935.....	686,895	1943.....	1,507,223
1924.....	2,003,649	1937.....	1,089,180	1944.....	1,390,457
1926.....	1,876,794	1938.....	1,100,881	1945.....	1,674,016

(*) Includes value of copings, flue linings, etc.

Table 375.—Production (Sales) of Fireclay Blocks and Shapes and Firebrick from Domestic Clays, by Provinces, 1945

Province	Fireclay		Fireclay blocks and shapes	Firebrick	
	Short tons	\$		M	\$
Nova Scotia.....	2,455	9,313	1,128	8	310
New Brunswick.....	8	209		8	400
Ontario.....	1,170	11,689	175,018		
Saskatchewan.....	632	10,205	49,129	3,450	185,941
British Columbia.....					
Canada.....	4,266	31,416	225,275	3,466	186,651

Table 376.—Production (Sales) of Fireclay, Fireclay Blocks and Shapes, and Firebrick from Domestic Clay, 1935-1945

Year	Fireclay		Fireclay blocks and shapes	Firebrick	
	Short tons	\$	\$	M	\$
1935.....	2,272	15,574	71,344	1,817	90,149
1936.....	2,437	17,639	65,171	2,548	118,923
1937.....	4,123	26,081	75,431	2,950	142,827
1938.....	2,344	17,243	73,512	2,213	113,581
1939.....	3,785	22,504	95,256	2,331	119,346
1940.....	4,881	30,564	85,127	3,167	165,525
1941.....	5,431	35,475	190,497	3,643	183,897
1942.....	5,601	40,722	210,246	3,816	197,830
1943.....	5,653	42,122	256,655	3,644	192,618
1944.....	7,630	38,433	221,251	3,180	164,837
1945.....	4,266	31,416	225,275	3,466	186,651

NOTE: Firebrick and fireclay blocks and shapes are made also from imported clays; see Table 394.

Table 377.—Production (Sales) of Pottery from Domestic Clays for Years Specified

Year	Value	Year	Value	Year	Value
	\$		\$		\$
1888.....	27,750	1928.....	356,093	1937.....	232,209
1898.....	214,675	1929.....	323,194	1938.....	235,890
1908.....	200,541	1930.....	294,866	1939.....	(*) 282,712
1913.....	53,533	1931.....	257,125	1940.....	474,452
1918.....	130,242	1932.....	244,861	1941.....	502,212
1924.....	238,242	1933.....	202,500	1942.....	646,088
1925.....	267,255	1934.....	223,733	1943.....	701,144
1926.....	320,135	1935.....	220,711	1944.....	838,544
1927.....	307,057	1936.....	218,402	1945.....	930,567

(*) Includes value of sanitaryware.

Table 378.—Production (Sales) of Pottery from Domestic Clays, by Provinces, 1943-1945

Province	1943	1944	1945
	\$	\$	\$
New Brunswick.....	68,058	75,288	46,792
Quebec.....	54,391	82,000	147,388
Ontario.....	63,600	60,000	69,182
Alberta.....	512,178	617,326	663,960
British Columbia.....	2,917	3,930	3,245
Canada.....	701,144	838,544	930,567

Table 379.—Production of Structural Tile in Canada, by Provinces, 1945

Province	Hollow blocks (*)		Roofing tile	Floor tile (quarries)	
	Short tons	\$	\$	Sq. ft.	\$
Nova Scotia.....	14,293	134,052	.....	.....	.....
New Brunswick.....	1,804	16,392	.....	.....	.....
Quebec.....	29,532	324,812	.....	.....	.....
Ontario.....	32,490	330,381	.....	197,164	46,365
Manitoba.....	.....	.....	.....	.....	.....
Saskatchewan.....	3,335	35,800	.....	.....	.....
Alberta.....	9,615	86,397	.....	.....	.....
British Columbia.....	3,175	70,376	.....	.....	.....
Canada.....	94,244	998,210	.....	197,164	46,365

(*) Including fireproofing and load-bearing tile.

Table 380.—Production of Structural Tile in Canada, 1935-1945

Year	Hollow blocks (*)		Roofing tile		Floor tile (quarries)	
	Short tons	\$	Number	\$	Sq. ft.	\$
1935.....	(†) 47,195	344,608	82,015	3,669	51,765	7,629
1936.....	58,501	467,860	52,730	2,139	97,738	13,798
1937.....	64,526	533,843	60,542	3,302	73,191	12,169
1938.....	70,648	591,416	150,504	5,196	100,958	15,330
1939.....	86,120	714,291	148,291	4,964	90,812	15,233
1940.....	105,073	788,478	417,272	1,939	.....	13,631
1941.....	117,530	1,063,120	.....	750	.....	21,349
1942.....	109,905	1,082,573	.....	32	.....	23,705
1943.....	84,469	819,535	.....	827	.....	26,949
1944.....	87,820	811,558	.....	.....	212,805	43,817
1945.....	94,244	998,210	.....	.....	197,164	46,365

(*) Including fireproofing and load-bearing tile.

(†) In addition, there was produced \$615 worth of ceramic tile.

Table 381.—Production (Sales) of Bentonite and Kaolin in Canada, by Provinces, 1935-1945

Year	Bentonite								Kaolin (a)	
	Manitoba		Alberta		British Columbia		Canada		Tons	\$
	Tons	\$	Tons	\$	Tons	\$	Tons	\$		
1935.....	.....	.....	.....	.....	41	781	41	781	170	1,520
1936.....	.....	.....	.....	.....	(b) 120	180	(b) 120	180	.....	.....
1937.....	132	1,154	.....	.....	31	817	163	1,971	.....	.....
1938.....	.....	.....	1,136	3,444	43	215	1,179	3,659	.....	.....
1939.....	99	591	889	2,850	.....	.....	988	3,441	.....	.....
1940.....	710	2,023	714	2,240	45	225	1,469	4,488	.....	.....
1941.....	760	1,330	1,317	5,882	95	618	2,172	7,830	2	30
1942.....	660	38,800	956	5,404	.....	.....	1,616	44,204	408	6,130
1943.....	.....	110,428	.....	5,262	.....	1,357	(c) 117,047	.....	93	1,531
1944.....	.....	160,265	.....	2,076	.....	1,504	(c) 163,848	.....	424	5,758
1945.....	.....	169,551	.....	1,248	.....	.....	(c) 170,799	.....	446	3,771

(a) All from Quebec.

(b) Partly for experimental purposes.

(c) Quantity not available for publication.

Table 382.—Fuller's Earth Used in Canada in the Manufacture of Soaps and Washing Compounds and in the Petroleum Products Industry, 1932-1945

Year	Petroleum Products Industry		Soaps and Washing Compounds	
	Pounds (*)	\$	Pounds	\$
1932.....	19,642,179	258,934	507,807	7,444
1933.....	22,811,655	314,515	588,434	8,501
1934.....	18,588,514	230,357	508,316	6,562
1935.....	18,487,148	260,885	660,018	13,694
1936.....	18,907,295	243,164	1,328,219	20,601
1937.....	18,843,458	240,309	1,167,768	20,393
1938.....	19,687,467	281,688	1,195,208	19,575
1939.....	19,814,473	304,214	1,586,163	30,924
1940.....	23,828,660	406,185	1,651,471	40,695
1941.....	30,155,750	571,010	1,486,000	39,332
1942.....	24,162,091	528,350	1,350,000	37,831
1943.....	25,390,653	601,283	2,410,000	83,233
1944.....	27,569,500	646,708	1,181,020	35,047
1945.....	28,606,000	685,761	750,000	24,351

(*) Includes all clays.

Table 383.—Production (Sales) in Canada of Clay Products Made from Domestic Clays, by Months, 1945 and 1946

Month	Building brick		Structural tile		Drain tile		Sewer pipe	Fireclay blocks and shapes	Pottery (b)		Other clay products (c)		Total
	M	\$	Ton	\$	M	\$			\$	\$	\$	\$	
1945 (a)													
January.....	8,154	183,389	5,377	52,023	149	5,938	47,126	20,243	69,768			29,648	408,135
February.....	10,372	198,584	3,599	37,042	171	5,906	31,091	17,880	74,691			33,530	398,724
March.....	12,697	259,460	6,624	69,682	650	20,256	84,317	29,860	74,151			38,955	547,681
April.....	12,697	259,976	6,708	68,345	744	25,718	100,432	13,166	66,135			38,942	572,714
May.....	13,799	302,807	8,208	82,878	1,108	38,901	113,541	16,000	76,201			41,330	681,658
June.....	15,188	345,007	8,323	92,040	1,434	47,777	110,353	25,251	71,658			46,208	738,294
July.....	18,066	398,067	8,947	94,913	1,332	47,477	126,522	15,410	49,131			43,250	774,772
August.....	18,241	413,405	8,800	95,289	1,322	56,635	112,639	21,120	69,933			45,431	814,592
September.....	19,226	436,678	9,644	102,060	1,448	56,283	96,639	25,500	62,276			49,948	829,324
October.....	21,170	485,364	11,131	119,697	1,632	61,939	121,025	17,394	90,139			57,483	953,041
November.....	19,322	445,339	9,443	99,065	1,532	56,517	123,032	23,015	104,458			53,070	905,996
December.....	14,983	348,725	6,387	69,140	794	30,795	87,546	14,919	86,471			43,157	680,753
Total.....	183,915	4,076,801	93,192	992,714	12,506	454,142	1,134,866	230,758	895,062			520,952	8,305,295
1946													
January.....	15,421	376,268	8,428	91,857	611	23,017	93,006	19,798	111,907			50,013	765,866
February.....	13,073	318,575	7,117	76,761	476	19,459	85,859	14,324	111,184			44,739	671,291
March.....	16,980	408,222	9,387	96,961	522	20,122	97,906	15,936	99,935			42,694	781,776
April.....	17,829	430,449	10,250	111,298	612	22,313	115,683	13,489	97,996			47,741	838,969
May.....	21,347	523,393	13,668	154,911	1,187	45,089	115,063	15,723	103,676			51,651	1,009,416
June.....	23,341	580,208	12,470	138,725	1,503	55,988	112,984	14,741	74,867			44,003	1,021,516
July.....	27,356	676,888	15,040	170,567	1,586	59,971	135,528	18,011	112,459			48,337	1,189,902
August.....	28,171	691,093	13,161	150,931	1,566	62,600	111,141	24,209	86,540			54,387	1,221,741
September.....	26,131	647,186	11,351	124,767	1,595	61,383	109,635	20,065	96,480			52,321	1,113,137
October.....	28,579	701,468	12,156	140,042	1,929	75,085	121,284	22,117	116,263			54,876	1,231,135
November.....	26,447	633,869	11,788	134,543	1,274	51,401	122,626	29,189	112,587			43,185	1,127,400
December.....	19,040	469,544	9,079	108,366	1,240	47,869	93,109	14,023	81,176			53,914	867,501
Total.....	263,721	6,457,353	134,155	1,499,729	14,199	545,797	1,314,124	221,625	1,205,071			587,861	11,829,560

(a) Data not revised to agree with statistics contained in the final annual report on the clay and clay products industry.

(b) Includes flower pots, stoneware, artware, etc.

(c) Includes floor tile, firebrick, etc.

Table 384.—China Clay (Kaolin) Used in the Manufacture of Paper in Canada, 1931-1945

Year	Tons	Value	Year	Tons	Value
		\$			\$
1931.....	11,484	173,660	1939.....	32,789	430,092
1932.....	14,432	205,068	1940.....	36,931	558,659
1933.....	20,048	267,014	1941.....	32,844	558,585
1934.....	27,550	357,286	1942.....	28,734	578,190
1935.....	33,766	422,584	1943.....	26,374	561,295
1936.....	39,165	520,121	1944.....	47,995	987,488
1937.....	41,738	578,223	1945.....	45,671	954,659
1938.....	34,968	488,147			

Table 385.—Clays and Earths Used in Canadian Rubber Goods Industry, 1934-1945

Year	Tons	Value	Year	Tons	Value
		\$			\$
1934.....	2,391	54,368	1940.....	3,586	90,867
1935.....	2,639	63,553	1941.....	4,059	101,441
1936.....	3,017	70,709	1942.....	1,523	37,186
1937.....	3,614	79,300	1943.....	1,257	35,266
1938.....	2,942	81,935	1944.....	1,909	51,942
1939.....	3,438	80,745	1945.....	3,953	102,182

Table 386.—Firebrick and Fireclay Used in the Manufacture of Iron and Steel and Their Products in Canada, 1932-1944

Year	Firebrick		Fireclay		Other fireclay, firebrick and cupola blocks
	Number	Value	Tons	Value	
		\$		\$	\$
1932.....	3,409,000	123,532	5,910	52,492	36,395
1933.....	1,846,016	141,784	7,615	62,602	(b) 11,628
1934.....	2,590,452	192,538	8,248	75,906	21,488
1935.....	(a)	451,604	11,510	101,601	28,064
1936.....	(a)	(a)	(c) \$ 779,014	(a)	(a)
1937.....	(a)	(a)	(c) \$1,058,787	(a)	(a)
1938.....	(a)	(a)	(c) \$ 838,012	(a)	(a)
1939.....	(a)	(a)	(c) \$ 939,495	(a)	(a)
1940.....	(a)	(a)	(c) \$1,597,898	(a)	(a)
1941.....	(a)	(a)	(c) \$2,581,813	(a)	(a)
1942.....	(a)	(a)	(c) \$3,268,181	(a)	(a)
1943.....	(a)	(a)	(c) \$3,717,826	(a)	(a)
1944.....	(a)	(a)	(c) \$3,195,751	(a)	(a)

(a) Not published separately.

(b) From 1933 includes only cupola blocks.

(c) Combined value for firebrick, fireclay and other fireclay, etc.

Table 387.—Fuller's and Infusorial Earth Used in Specified Canadian Industries, 1933-1945

Year	Sugar refineries		Vegetable oil mills	
	Pounds	\$	Pounds	\$
1933.....	(a)	(a)	126,880	2,730
1934.....	(a)	(a)	115,120	2,171
1935.....	(a)	(a)	88,950	2,425
1936.....	(b) 59,200	1,730	243,720	10,044
1937.....	(c) 4,586,786	95,532 (*)	212,997	9,349
1938.....	(c) 4,908,697	101,473	190,253	9,063
1939.....	(c) 4,819,811	105,711 (b)	207,105	10,166
1940.....	(c) 4,984,362	112,369 (b)	216,254	7,731
1941.....	(c) 5,333,131	133,129 (b)	275,290	10,604
1942.....	(c) 3,007,180	75,295 (b)	437,120	20,154
1943.....	(c) 3,451,142	89,075 (b)	484,380	20,302
1944.....	(c) 4,375,201	115,053 (b)	431,820	17,991
1945.....	(c) 3,983,325	102,961	207,950	6,794

(a) Not recorded.

(b) Fuller's earth, in 1942, includes 97,785 pounds clarex earth valued at \$4,657; in 1943 it includes 164,130 pounds valued at \$7,836; in 1944 it includes 20,000 pounds valued at \$1,100, and in 1945 nil.

(c) Infusorial earth.

(*) Includes other earth.

NOTE: In addition to the consumption recorded, there is a considerable quantity of fuller's earth used by the slaughtering industry.

Table 388.—Employees, Salaries and Wages in the Clay Products Industry in Canada, 1940-1945

Year	Number of employees					Salaries	Wages	Total salaries and wages
	On salaries		On wages		Total employees			
	Male	Female	Male	Female				
1940.....	261	35	2,261	.....	2,557	605,913	2,069,338	2,675,251
1941.....	241	41	2,599	.....	2,881	602,549	2,625,236	3,227,785
1942.....	227	54	2,082	160	2,523	590,545	2,482,466	3,073,011
1943.....	190	58	1,718	207	2,173	570,300	2,339,541	2,909,841
1944.....	195	58	1,786	208	2,247	594,282	2,582,522	3,176,804
1945.....	225	66	2,188	209	2,688	652,758	3,175,448	3,828,206

Table 389.—Wage-Earners in the Clay Products Industry in Canada, by Months, 1944 and 1945

Month	1944				1945			
	Pit	Plant		Total	Pit	Plant		Total
	Male	Male	Female		Male	Male	Female	
January.....	91	1,427	183	1,701	140	1,579	185	1,904
February.....	88	1,405	198	1,691	138	1,570	188	1,896
March.....	88	1,455	196	1,739	142	1,589	204	1,935
April.....	101	1,587	197	1,885	187	1,720	218	2,125
May.....	146	1,781	200	2,107	246	1,863	205	2,314
June.....	153	1,827	214	2,194	271	2,030	203	2,504
July.....	161	1,843	217	2,221	283	2,132	205	2,620
August.....	172	1,748	215	2,135	288	2,236	202	2,726
September.....	163	1,735	212	2,110	262	2,155	193	2,610
October.....	163	1,732	208	2,093	259	2,218	218	2,695
November.....	134	1,654	211	1,999	217	2,262	209	2,688
December.....	102	1,588	210	1,900	188	2,175	253	2,616
Average.....	133	1,653	208	1,994	225	1,963	209	2,397

II. Products from Imported Clays, 1945

This industry covers the operations of Canadian plants which were occupied chiefly in making ceramic products from imported clays. Products made in these plants during 1945 included high tension insulators, vitreous china sanitary ware, china dinnerware, firebrick, sewer pipe, floor and wall tile, refractory cements, electrical porcelains, etc.

Twenty-eight plants reported in this group for 1945 and their output was valued at \$5,327,282 against last year's total of \$4,424,565 and the 1943 figure of \$4,385,416. The average number of workers was 1,427 and payments for salaries and wages totalled \$2,064,645. Fuel and electricity cost \$345,127 and materials for use in manufacturing processes cost \$1,167,283.

Table 390.—Principal Statistics of the Imported Clay Products Industry, 1944 and 1945

	1944	1945
Number of plants.....	24	28
Average number of employees.....	1,241	1,427
Salaries and wages.....	\$ 1,819,307	\$ 2,064,645
Cost of fuel and electricity.....	\$ 310,155	\$ 345,127
Cost of materials at works.....	\$ 979,998	\$ 1,167,283
Gross selling value of products at works.....	\$ 4,424,565	\$ 5,327,282

NOTE: Profits or losses cannot be calculated from above figures as data are not available for general expense items, such as interest, rent, depreciation, taxes, insurance, advertising, etc.

Table 391.—Imports Into Canada and Exports of Clay and Clay Products, 1944 and 1945

	1944		1945	
	Quantity	\$	Quantity	\$
IMPORTS				
Building brick.....ton	3,972	47,968	3,815	51,814
Building blocks and fireproofing tile.....		22,802		55,728
Clays—China.....cwt.	1,150,410	615,279	1,273,203	712,546
Fire.....cwt.	1,524,626	289,581	1,457,888	286,916
Pipe.....cwt.	99,000	11,521	144,928	18,528
Other clays, n.o.p.....		194,385		165,387
Zirconium silicate.....		16,302		19,467
Zirconium oxide.....		26,944		41,120
Drain tile, unglazed.....				1,513
Drain, sewer pipe and earthenware fittings therefor, chimney linings or vents, chimney tops or inverted blocks, glazed or unglazed, n.o.p.....		12,027		42,139
Tiles or blocks of earthenware or stone prepared for mosaic flooring.....		64,904		63,006
Tiles, earthenware, for roofing purposes.....		4,522		1,209
Tiles, earthenware, n.o.p.....		181,264		248,176
Insulators, electric, porcelain.....		194,136		281,611
Pottery, chinaware and earthenware, n.o.p.....		4,789,478		5,629,055
Brick, fire, other, valued at not less than \$100 per M, rectangular shaped, the dimensions of each not to exceed 125 cubic inches, for use exclusively in the construction or repair of a furnace, kiln, etc.....		38,164		12,627
Brick, fire, n.o.p., for use exclusively in the construction or repair of a furnace, kiln or other equipment of a manufacturing establishment (not made in Canada).....		1,434,601		1,573,134
Firebrick, n.o.p.....		1,227,598		1,230,274
Firebrick, chrome.....		437,980		448,440
Magnesite brick (fire).....		718,481		305,141
Silica brick (containing not less than 90 per cent silica).....		718,638		741,394
Paving brick.....ton	1,164	10,407	2,617	25,686
Artificial teeth, not mounted.....		814,014		818,235
Baths, bathtubs, basins, laundry tubs, etc., of earthenware, cement or clay, n.o.p.....		104,729		254,050
Saggars.....		17,133		26,143
Crucibles, clay or sand.....		25,885		41,766
Other manufactures of clay, n.o.p.....		207,530		159,885
Activated clay to refine oil.....		366,719		347,823
Grog for refractory materials.....ton	2,448	49,165	4,439	47,766
Total.....		12,636,557		13,650,579
EXPORTS				
Building brick.....M	1,955	36,652	3,708	75,963
Bricks, fire.....		157,107		165,940
Clay, manufactures of.....		39,373		25,292
Clays, unmanufactured.....cwt.	48,621	14,114	23,434	6,260
Earthenware.....		61,931		67,860
Porcelain insulators.....		216,675		285,933
Total.....		525,852		627,248

Table 392.—Materials Used in the Imported Clay Products Industry, 1944 and 1945

Material	1944		1945	
	Short tons	Total cost at works	Short tons	Total cost at works
		\$		\$
Imported clays—Ball clay.....	2,650	54,503	3,209	58,835
China clay.....	2,845	71,979	3,183	73,750
Fireclay.....	29,780	236,089	27,892	227,826
Saggars clay.....	669	12,220	648	11,157
Other imported clays.....	247	18,365	1,090	23,258
Canadian clays—Fireclay.....	40	840	35	735
Other clays.....	25	75	22	705
Feldspar.....	2,325	50,237	2,747	58,135
Silica and ground quartz.....	3,441	55,627	3,659	52,946
Talc.....	535	8,564	713	12,392
Other glazing materials.....		31,538		21,811
Insulator hardware.....		83,629		215,620
Shipping containers and packing materials.....		129,767		165,470
All other materials.....		226,565		244,643
Total.....		979,998		1,167,283

Table 393.—Products Made in the Imported Clay Products Industry, 1944 and 1945

Product	1944	1945
	Gross selling value at works	Gross selling value at works
	\$	\$
Firebrick and stove linings—Rigid.....	496,914	452,110
Plastic.....	236,068	277,019
High temperature cements.....	102,908	125,425
High tension porcelain insulators, china sanitary ware, clay sewer pipe, floor and wall tile, pottery, china tableware, etc. (Separate figures cannot be shown for these items as there were only one or two producers in each case).....	3,588,675	4,472,728
Total.....	4,424,565	5,327,282

Table 394.—Total Production in Canada of Refractory Shapes, 1935-1945

Year	From domestic clays			Silica brick		Other (*)	Total
	Fireclay blocks and shapes	Firebrick				Rigid fire- brick and stove linings	
		M	\$	M	\$		
	\$					\$	\$
1935.....	71,344	1,817	90,149	2,461	96,194	314,825	572,512
1936.....	65,171	2,548	118,923	2,393	97,285	330,602	611,981
1937.....	75,431	2,950	142,827	3,744	181,126	441,341	840,725
1938.....	73,512	2,213	113,581	1,788	100,403	448,494	735,990
1939.....	95,256	2,331	119,346	2,493	124,807	640,376	979,785
1940.....	85,127	3,167	165,525	3,438	182,786	892,072	1,325,510
1941.....	190,497	3,643	183,897	4,111	238,433	1,186,805	1,799,632
1942.....	210,246	3,816	197,830	4,273	263,006	1,753,245	2,424,327
1943.....	262,154	3,644	192,618	4,165	295,505	1,461,484	2,211,761
1944.....	221,251	3,180	164,837	3,764	296,292	1,706,706	2,389,086
1945.....	225,275	3,466	186,651	4,208	317,263	1,484,301	2,213,490

(*) Includes shapes made from imported clays, from magnesite, etc.

LIME INDUSTRY, 1945

Production of lime in Canada during 1945 totalled 832,253 tons valued at \$6,525,038, a decline of 6 per cent in quantity and 6 per cent in value from the corresponding figures for 1944. This year's output included 708,173 tons of quicklime at \$5,579,868, and 124,080 tons of hydrated lime at \$945,170. About 95 per cent of the quicklime and 49 per cent of the hydrated lime were used by chemical and other industrial plants, and 5 per cent and 51 per cent, respectively, were used by the building trades and for agriculture.

Stone used in the production of lime in Canada includes calcium, high calcium and dolomitic varieties of limestone. It is estimated that approximately 1,482,000 tons of limestone were consumed in the production of lime in 1945. In addition, a considerable tonnage of lime was recovered as a by-product from chemical and allied plants.

In 1945 there were 44 active plants in this industry and the average number of employees for the year was 856. Expenditures by the operators included \$1,473,829 for salaries and wages, \$1,644,077 for fuel and electricity, and \$424,412 for containers and process supplies.

Imports of lime in 1945 totalled 6,354 tons at \$35,766 and exports amounted to 20,842 tons at \$235,362.

Table 395.—Principal Statistics for the Lime Industry in Canada, 1936-1945

Year	Establish- ments	Employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies and containers	Gross value of products sold dur- ing year, including containers (f.o.b. works)
	Number	Number	\$	\$	\$	\$
1936.....	57	799	640,322	743,663	96,316	3,335,970
1937.....	57	872	781,274	871,131	167,827	3,824,917
1938.....	53	867	795,068	826,230	113,759	3,542,652
1939.....	59	937	849,468	944,502	107,510	4,003,514
1940.....	55	962	1,003,671	1,424,047	260,321	(*) 5,277,377
1941.....	50	1,105	1,321,571	2,008,142	188,387	6,357,941
1942.....	48	1,022	1,312,320	2,421,292	177,268	6,530,839
1943.....	45	898	1,408,393	1,747,012	177,470	6,832,992
1944.....	42	815	1,414,426	1,752,723	293,827	(*) 7,051,785
1945.....	44	856	1,473,829	1,644,077	424,412	(*) 6,732,348

(*) 1940, 1944 and 1945 are the only years in which the value of containers is available.

Table 396.—Employees, Salaries and Wages in the Lime Industry in Canada, 1940-1945

Year	Number of employees				Salaries	Wages	Total salaries and wages	
	On salaries		On wages					Total employees
	Male	Female	Male	Female				
					\$	\$	\$	
1940.....	67	10	885		962	127,943	875,728	1,003,671
1941.....	76	16	1,013		1,105	150,695	1,170,876	1,321,571
1942.....	80	18	924		1,022	161,777	1,150,543	1,312,320
1943.....	78	21	797	2	898	158,629	1,249,764	1,408,393
1944.....	80	22	713		815	178,802	1,235,624	1,414,426
1945.....	81	19	748	8	856	194,191	1,279,638	1,473,829

Table 397.—Wage-Earners in the Lime Industry in Canada, by Months, 1944 and 1945

Month	1944					1945				
	Quarry		Kiln		Total	Quarry		Kiln		Total
	Male	Female	Male	Female		Male	Female	Male	Female	
January.....	242		469		711	213	1	434	9	707
February.....	237		486		723	217	1	508	8	734
March.....	248		498		746	225	1	528	9	763
April.....	235		495		730	220	1	521	8	750
May.....	237		486		723	211	1	519	7	738
June.....	232		477		709	206	1	499	7	713
July.....	242		468		710	212	1	513	7	733
August.....	222		447		669	224	1	499	5	729
September.....	229		453		682	220	1	514	7	742
October.....	215		491		706	232	1	590	7	830
November.....	237		486		723	264	1	584	8	857
December.....	224		432		656	230	1	537	5	773
Average.....	237		476		713	222	1	526	7	756

Table 398.—Production of Lime in Canada, by Provinces, 1945, Showing Purposes for which Used(*) or Sold

	Nova Scotia and New Brunswick	Quebec	Ontario	Manitoba and Alberta	British Columbia	Total Canada
(1 ton=2,000 pounds)						
QUICKLIME						
Building trades—						
Finishing lime.....ton		38	25	5,505		5,568
\$		950	504	52,191		53,645
Mason's lime.....ton	345	5,708	11,593	739	1,660	20,045
\$	4,219	105,966	116,238	8,368	14,110	248,901
Agriculture.....ton			186			186
\$			1,321			1,321
INDUSTRIAL—						
Smelters (non-ferrous).....ton		311	1,039	2,035		3,385
\$		2,364	7,290	16,330		25,984
Iron and steel furnaces (†).....ton	2,041	4,914	19,283	700	3,335	30,273
\$	24,997	43,366	140,740	5,600	28,348	243,051
Cyanide and flotation mills.....ton		585	5,477	6,982	847	13,891
\$		4,407	42,060	64,659	7,200	118,326
Pulp and paper mills.....ton	13,912	102,790	10,762	12,991	33,799	174,254
\$	156,732	812,230	70,787	101,356	329,900	1,471,005
Glass works.....ton			12,581			12,581
\$			106,406			106,406
Sugar refineries.....ton	180	2	5,486	10,339		16,007
\$	2,201	42	54,014	85,738		141,995
Tanneries.....ton	4	1,588	2,125			3,717
\$	49	13,785	15,029			28,863
Sand-lime brick.....ton		1,718	3,795			5,513
\$		11,854	32,606			44,460
Insecticide plants.....ton			936			936
\$			6,550			6,550
Other industrial works.....ton	45	122,148	286,591	2,000		410,784
\$	4,261	869,153	2,083,707	16,000		2,973,121
Uses unspecified.....ton	1,459	4,688	718	1,029	3,139	11,033
\$	22,966	47,449	5,406	13,738	26,681	116,240
Total Quicklime.....ton	17,986	244,490	360,597	42,320	42,780	708,173
\$	215,425	1,911,566	2,682,658	363,980	406,239	5,579,868
HYDRATED LIME						
Building trades—						
Finishing lime.....ton		10,183	21,843	5,639		37,665
\$		42,173	282,267	94,384		418,824
Mason's lime.....ton	491	589	6,418			7,498
\$	6,481	9,442	64,651			80,574
Agriculture.....ton	50	5,258	2,648		6,278	14,234
\$	660	15,091	27,818		48,089	91,658
INDUSTRIAL—						
Smelters (non-ferrous).....ton		37,720	1	50		37,771
\$		119,550	8	500		120,058
Iron and steel furnaces.....ton			96			96
\$			1,002			1,002
Cyanide and flotation mills.....ton		1,785	205	150	45	2,185
\$		4,141	2,152	1,500	345	8,138
Pulp and paper mills.....ton	1,643	5,540	3,089		80	10,352
\$	21,688	52,498	33,047		613	107,846
Sugar refineries.....ton	40	121		3,141		3,302
\$	528	1,241		21,651		23,420
Tanneries.....ton		200	1,145			1,345
\$		1,850	12,103			13,953
Sand-lime brick.....ton						
\$						
Insecticide plants.....ton	50		7		300	357
\$	660		73		2,298	3,031
Other industrial works.....ton	150	2,974	2,344	50		5,518
\$	1,980	20,531	23,025	500		46,036
Uses unspecified.....ton		2,197	254		1,306	3,757
\$		17,754	2,872		10,004	30,630
Total Hydrated Lime.....ton	2,424	66,567	38,050	9,030	8,009	124,080
\$	31,997	284,271	449,018	118,535	61,349	945,170
Grand Total.....ton	20,410	311,057	398,647	51,350	50,789	832,253
\$	247,422	2,195,837	3,131,676	482,515	467,588	6,525,038

(†) Includes calcined dolomite used as a refractory material.

(*) Not necessarily consumed in provinces where produced; includes by-product lime.

NOTE: Of the total quantity of 832,253 tons of lime produced, 416,223 tons were consumed by the producers themselves.

Table 399.—Production of Lime in Canada, 1931-1945

Year	Sold or used (*)		Year	Sold	Used by producer	Total value
	Short tons	Value				
		\$		Short tons	Short tons	\$
1931.....	344,785	2,764,415	1939.....	288,252	263,957	4,003,514
1932.....	320,650	2,394,537	1940.....	359,180	357,550	5,194,555
1933.....	323,540	2,432,306	1941.....	451,361	409,524	6,357,941
1934.....	368,113	2,745,797	1942.....	470,882	413,948	6,530,839
1935.....	405,419	2,925,791	1943.....	484,177	423,591	6,832,992
1936.....	468,401	3,335,970	1944.....	470,035	415,017	6,926,844
1937.....	549,353	3,824,917	1945.....	416,030	416,223	6,525,038
1938.....	486,922	3,542,652				

(*) Separate data for Sold and Used not available until 1939.

Table 400.—Lime Sold or Used for Chemical and Other Purposes in Canada, 1931-1945

Year	Lime sold or used for chemical and industrial purposes				Lime sold or used for building or other non-industrial purposes			
	Quicklime		Hydrated lime		Quicklime		Hydrated lime	
	Short tons	\$	Short tons	\$	Short tons	\$	Short tons	\$
1931.....	213,782	1,469,434	18,055	167,885	65,726	595,550	47,222	531,546
1932.....	234,342	1,627,720	21,130	131,178	33,920	287,795	31,252	347,844
1933.....	207,463	1,496,271	23,347	168,675	60,464	459,451	27,266	307,909
1934.....	201,609	1,440,221	23,297	158,685	106,513	798,035	31,694	348,856
1935.....	229,597	1,596,518	31,288	179,139	112,450	825,904	32,084	321,230
1936.....	349,940	2,499,074	39,384	171,132	41,559	290,898	37,518	374,806
1937.....	421,867	2,922,482	44,929	189,665	44,671	329,901	37,886	382,869
1938.....	373,278	2,587,329	30,547	159,598	42,483	365,762	40,014	429,963
1939.....	424,287	2,887,244	30,861	172,062	50,466	439,403	46,595	504,805
1940.....	568,479	3,944,748	44,421	256,570	55,324	477,010	48,506	516,227
1941.....	665,319	4,797,078	86,202	496,531	58,545	490,633	50,819	573,699
1942.....	712,307	5,314,653	89,252	386,809	36,975	331,396	46,297	497,681
1943.....	730,499	5,642,420	94,224	381,250	35,648	347,668	47,397	461,654
1944.....	700,708	5,545,695	89,576	413,573	37,494	402,384	57,364	565,192
1945.....	671,341	5,159,761	60,926	323,484	36,832	420,107	63,154	621,680

Table 401.—Imports Into Canada and Exports of Lime and Various Lime Compounds, 1944 and 1945

	1944		1945	
	Quantity	Value	Quantity	Value
	Tons	\$	Tons	\$
IMPORTS				
Lime—United States.....	6,698	34,917	6,354	35,766
Total.....	6,698	34,917	6,354	35,766
EXPORTS				
Building lime—Greenland.....			3	69
Newfoundland.....	21	625	21	338
United States.....	3	50	135	1,687
Total.....	24	675	159	2,094
Lime n.o.p.—Jamaica.....	10	220	10	220
Newfoundland.....	174	2,418	106	1,580
Greenland.....	5	75	3	45
St. Pierre.....	2	37	1	40
United States.....	15,236	133,372	20,722	233,477
Total.....	15,427	136,122	20,842	235,362

THE SAND AND GRAVEL INDUSTRY

Commercial production of sand and gravel in Canada during 1945 totalled 29,750,703 short tons valued at \$10,568,363 compared with 28,399,986 short tons worth \$10,280,119 in 1944. Included in the totals for both years are sands and gravels from various sources, including recoveries by dredges, materials used by railroads as ballast and sand and gravel used by mines as backfill.

Ontario and Quebec are Canada's largest sand and gravel-producing provinces, the tonnages in 1945 being, respectively, 10,466,891 and 8,971,960. In 1945 the quantity of material washed or screened at Canadian sand and gravel plants totalled 4,584,018 tons compared with 3,442,147 tons in 1944, and the quantity of bank or pit-run grades amounted to 25,166,685 tons as against 24,957,839 tons in the preceding year.

Of the total sand and gravel (mixed) output in 1945, there were 17,582,686 tons used for concrete, roads, etc., and 4,625,513 tons as railroad ballast. In addition, there were produced 2,247,887 tons of straight-run sand for building, concrete, etc., 31,611 tons for moulding, 1,374 tons as core sand and 190,136 tons for other purposes. The quantity of crushed gravel produced during the year under review was 3,096,611 tons. Other sand used as mine backfill in 1945 totalled 1,974,885 tons.

Imports of sand and gravel amounted to 104,444 tons valued at \$78,006 in 1945 and Canadian exports of sand and gravel totalled 316,621 tons worth \$192,813.

The following extract with regard to sand and gravel in Canada has been taken from the annual review by the Bureau of Mines, Ottawa:

"Deposits of gravel and sand are numerous throughout Eastern Canada; with the exception of Prince Edward Island, where gravels are scarce. Owing to the widespread occurrence of gravels and sands and to their bulk in relation to value, local needs for these materials are usually supplied from the nearest deposits as their cost to the consumer is governed largely by the length of haul; hence the large number of small pits and the small number of large plants. Some grades of sand particularly suitable for certain industries command a much higher price than does ordinary sand.

"By far the greater part of the output of gravel and sand is used in road improvement, concrete works, and railway ballast. Gravel in particular has proved a good material in the building of all weather roads at low cost and its use has steadily increased with the growth of motor traffic. A considerable tonnage of sand and gravel is used in the mines for refilling underground workings. Some mines use several thousand tons a day.

"Most of the gravel used for road work comes from pits worked for that purpose. Usually a portable or semi-portable plant is used to extract enough gravel to supply the immediate need, and then a sufficient reserve is built up, in the form of stockpiles, for two years' requirements. Gravel in road pits may remain unused for two years or more, and the amount of gravel produced from year to year thus fluctuates, depending upon the program of road construction and improvement. Gravel in railway pits may remain unused for several years. Part of the gravel used is crushed, screened, and in some cases even washed, and the proportion thus processed is increasing steadily. Some provincial highway departments have used crushed instead of pit-run gravel on their main highways for a number of years. Most of the large commercial plants are equipped for producing crushed gravel, a product that can compete with crushed stone.

"Most of the sand is used in the building industry for concrete work, cement and lime mortar, or wall plaster. It must be free from dust, loam, organic matter, or clay, and contain little silt, and is usually obtainable from local deposits. Other important uses of sand are moulding in foundries, filtering of water supply, and glass making, all of which require special grades of sand.

"War conditions did not materially affect the total consumption of sand and gravel as the extra amount absorbed by war services was partly, if not wholly, offset by decreased activity in industries that ordinarily use large quantities.

"Prices of sand, gravel, and crushed stone in the four largest cities in Canada were as shown below at the end of 1944 and 1945. Prices per ton or cubic yard, as indicated below, are for carlots, f.o.b. cars:

	Montreal		Toronto		Winnipeg		Vancouver	
	per ton		per ton		per cu. yd.		per cu. yd.	
	1944	1945	1944	1945	1944	1945	1944	1945
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Sand.....	1 20	1 20	1 04	1 00	1 00	1 00	1 00	1 00
Gravel.....	1 10	1 10	1 55	1 58	1 00	1 00	1 00	1 00
Crushed stone.....	0 97	0 97	1 72	1 70			1 10	1 10

Table 402.—Production in Canada of Sand and Gravel, 1944-1945

	1944	Washed or screened tons	Bank or pit run tons	Total value \$
PRODUCTION (*)—				
Sand:				
Moulding sand.....		19,935	12,012	65,168
Building sand and sand for concrete, roadwork, etc.....		1,289,094	316,420	743,191
Core sand.....		7,275		4,408
Mine filling.....		247	3,007,175	397,578
Other sand (including blast sands, engine sands, etc.).....		7,781	35,457	14,353
Sand and Gravel:				
Sand and gravel for railway ballast.....		339,982	4,088,739	900,610
Sand and gravel for concrete, road-building, etc.....		1,430,953	15,217,558	6,898,582
Crushed gravel.....		346,880	2,280,478	1,256,229
Total.....		3,442,147	24,957,839	10,280,119
PRODUCTION (*)—				
Sand:				
Moulding sand.....		20,501	11,110	57,842
Building sand and sand for concrete, roadwork, etc.....		1,722,803	525,084	918,739
Core sand.....		1,374		2,121
Mine filling.....		5,530	1,969,355	376,935
Other sand (including blast sands, engine sands, etc.).....		145,446	44,690	66,347
Sand and Gravel:				
Sand and gravel for railway ballast.....		689,297	3,936,216	1,116,297
Sand and gravel for concrete, road-building, etc.....		1,643,085	15,939,601	6,573,527
Crushed gravel.....		355,982	2,740,629	1,456,555
Total.....		4,584,018	25,166,685	10,568,363

(*) Does not include production of natural silica sand or of silica sand manufactured from quartz or silica rock; production of these are recorded under quartz in the bulletin "The Feldspar and Quartz Mining Industry".

Table 403.—Production of Sand and Gravel, by Provinces, 1941-1945

Province	1941	1942	1943	1944	1945
Prince Edward Island.....tons	(*)	(*)	(*)	(*)	(*)
\$	(*)	(*)	(*)	(*)	(*)
Nova Scotia.....tons	749,441	775,795	917,376	911,970	1,308,848
\$	332,531	371,970	585,007	411,041	555,809
New Brunswick.....tons	962,483	923,020	719,531	1,960,382	1,627,371
\$	423,772	540,541	372,936	958,524	686,267
Quebec.....tons	11,681,390	11,026,249	10,601,376	8,541,400	8,971,960
\$	2,673,300	2,485,853	2,362,635	2,140,856	2,279,537
Ontario.....tons	11,569,382	8,420,358	8,285,309	9,529,803	10,466,891
\$	4,524,463	3,433,986	3,620,852	4,417,427	4,466,862
Manitoba.....tons	1,503,901	1,443,001	1,048,673	1,102,448	1,497,062
\$	429,896	427,150	293,938	296,086	516,380
Saskatchewan.....tons	1,220,801	679,979	1,288,263	1,163,097	1,237,595
\$	406,835	435,798	583,687	533,175	563,276
Alberta.....tons	956,484	481,644	626,157	833,524	919,736
\$	433,504	218,914	309,389	328,151	433,436
British Columbia.....tons	2,960,924	2,599,861	2,257,784	4,357,362	3,721,240
\$	1,151,322	1,091,202	877,413	1,194,859	1,066,796

(*) No commercial production reported.

Table 404.—Production(*) of Sand and Gravel in Canada, 1935-1945

Year	Tons	\$	Year	Tons	\$
1935.....	21,213,489	6,389,440	1940.....	31,375,415	11,759,245
1936.....	22,124,160	6,921,399	1941.....	31,604,806	10,375,723
1937.....	27,001,301	10,492,696	1942.....	26,349,907	9,005,414
1938.....	32,223,882	12,002,554	1943.....	25,744,469	9,005,857
1939.....	31,294,341	11,241,102	1944.....	28,399,986	10,280,119
			1945.....	29,750,703	10,568,363

(*) Does not include production of natural silica sand or of silica sand manufactured from quartz or silica rock; production of these is recorded under quartz. Also does not include sand used for backfilling at mines prior to 1936.

Table 405.—Production of Washed and Screened and Pit Run Grades, by Provinces, 1945

Province	Washed or screened	Bank or pit run	Total value
	tons	tons	\$
Nova Scotia.....	256,746	1,052,102	555,809
New Brunswick.....	65,198	1,562,173	686,267
Quebec.....	584,711	8,387,249	2,279,537
Ontario.....	2,438,755	8,028,136	4,466,862
Manitoba.....	401,852	1,095,210	516,380
Saskatchewan.....		1,237,595	563,276
Alberta.....	59,763	859,973	433,436
British Columbia.....	776,993	2,944,247	1,066,796
Total.....	4,584,018	25,166,685	10,568,363

Table 406.—Production of Sand for Building and Concrete, Roads, etc., and Sand and Gravel for Railway Ballast and for Concrete, Roads, etc., 1935-1945

Year	Sand		Sand and Gravel			
	For building, concrete, roads, etc. (*)		For railway ballast		For concrete, roads, etc.	
	Tons	\$	Tons	\$	Tons	\$
1935.....	787,412	264,435	2,267,195	415,092	17,531,047	5,357,331
1936.....	956,502	362,542	6,318,681	1,054,703	14,336,640	5,216,942
1937.....	1,356,269	476,824	2,764,639	533,876	19,453,188	8,340,764
1938.....	1,750,187	685,976	2,359,703	443,936	22,513,256	9,101,882
1939.....	1,169,899	364,829	3,223,718	603,288	22,899,751	8,988,114
1940.....	1,961,604	537,937	3,834,904	699,518	21,465,961	9,100,612
1941.....	2,192,405	729,901	4,836,908	916,979	19,769,798	7,135,258
1942.....	2,535,366	934,777	4,610,323	957,781	16,139,859	6,010,412
1943.....	1,970,316	775,392	3,837,111	712,140	16,060,686	6,155,625
1944.....	1,605,514	743,191	4,428,721	900,610	16,648,511	6,898,582
1945—						
Nova Scotia.....			428,377	161,218	671,962	259,975
New Brunswick.....	44,107	6,334	146,286	58,444	1,027,295	375,897
Quebec.....	897,169	335,740	517,873	106,592	5,754,165	1,185,847
Ontario.....	1,072,416	500,526	2,330,577	564,166	5,621,507	2,819,012
Manitoba.....	44,617	9,830	300,056	47,424	1,132,392	441,588
Saskatchewan.....	27	4	393,399	62,026	835,135	496,548
Alberta.....	69,625	17,095	191,653	51,307	611,603	328,916
British Columbia.....	119,926	49,210	317,292	65,120	1,928,627	665,744
Canada, 1945.....	2,247,887	918,739	4,625,513	1,116,297	17,582,686	6,573,527

(*) Exclusive of engine and other sands and mine fill.

Table 407.—Principal Statistics(*) for the Sand and Gravel Industry in Canada, 1944 and 1945

Province	Establishments	Employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies and containers	Gross value of products sold during year (f.o.b. works)
	Number	Number	\$	\$	\$	\$
1944						
Nova Scotia.....	5	153	127,271	1,494	250	313,631
New Brunswick.....	5	261	221,168	5,415	1,355	709,008
Quebec.....	869	628	719,256	31,890	7,475	1,912,933
Ontario.....	600	330	483,606	228,163	20,496	4,213,326
Manitoba.....	10	164	288,701	10,305	13,659	242,000
Saskatchewan.....	5	17	52,643	675	10,052	456,511
Alberta.....	3	67	121,046	10,912	2,004	282,447
British Columbia.....	23	153	247,839	44,405	3,188	1,134,331
Total.....	1,520	1,773	2,261,530	333,259	58,479	9,244,187
1945						
Nova Scotia.....	4	296	304,914	14,322	5,954	399,771
New Brunswick.....	4	242	208,575	2,033	2,113	425,926
Quebec.....	851	836	794,773	40,597	8,730	2,061,657
Ontario.....	604	328	492,733	216,127	17,657	4,111,329
Manitoba.....	9	115	263,230	8,253	28,565	470,091
Saskatchewan.....	6	53	61,705	428	3,921	501,193
Alberta.....	4	30	67,585	11,208	5,220	379,244
British Columbia.....	21	174	256,442	47,124	4,138	996,328
Total.....	1,593	2,074	2,449,957	340,092	76,298	9,345,539

(*) Does not include data on sand and gravel produced by railroads. In 1944 railroad production by 21 operators was 4,633,980 tons valued at \$1,035,932. Salaries and wages paid to workers at these pits was \$269,458 for the year. In 1945 railroad production by 21 operators was 5,177,342 tons valued at \$1,222,824, and salaries and wages totalled \$309,249.

Table 408.—Wage-Earners(*) in the Sand and Gravel Industry in Canada, by Months, 1944 and 1945

Month	1944			1945		
	Male	Female	Total	Male	Female	Total
January.....	374	3	377	440	.....	440
February.....	367	3	370	422	.....	422
March.....	376	3	379	466	.....	466
April.....	552	4	556	606	1	607
May.....	2,487	5	2,492	2,432	1	2,433
June.....	5,529	7	5,536	5,799	1	5,800
July.....	3,946	7	3,953	5,826	1	5,827
August.....	2,406	6	2,412	2,552	1	2,553
September.....	1,464	4	1,468	2,524	2	2,526
October.....	707	4	711	851	2	853
November.....	632	4	636	791	2	793
December.....	495	4	499	617	1	618
Average.....	1,662	5	1,667	1,976	2	1,978

(*) This report does not include employment data relating to the production of sand and gravel by railroads owing to the difficulty of separating statistics pertaining to part-time work conducted by railroad maintenance employees and work done by contractors. In 1945 the combined amount paid by railroads to contractors and wages paid railroad employees for the production of sand and gravel totalled \$309,249.

Table 409.—Production of Moulding and Core Sand and Crushed Gravel, by Provinces, 1945

Province	Moulding sand		Core sand		Crushed gravel	
	Tons	\$	Tons	\$	Tons	\$
Nova Scotia.....	1,068	4,005	.....	.....	207,441	130,611
New Brunswick.....	.....	.....	.....	.....	409,683	245,592
Quebec.....	.....	.....	.....	.....	1,778,069	645,532
Ontario.....	29,536	53,091	1,374	2,121	525,001	306,688
Manitoba.....	1,007	746	.....	.....	14,544	14,652
Saskatchewan.....	.....	.....	.....	.....	9,034	4,698
Alberta.....	.....	.....	.....	.....	39,358	34,026
British Columbia.....	.....	.....	.....	.....	113,481	74,756
Canada, 1945.....	31,611	57,842	1,374	2,121	3,096,611	1,456,555
Canada, 1944.....	31,947	65,168	7,275	4,408	2,627,358	1,256,229

MOULDING SAND (NATURAL BONDED)

(From the annual review of the Bureau of Mines, Ottawa)

Moulding sands are mixtures of sand and clay which, when moist, can be formed into moulds from which metal castings can be made. When suitable mixtures occur they are called natural bonded moulding sands. (Mechanically prepared moulding sand is made by the addition of bonding clay to silica.)

In Canada, natural bonded moulding sands usually occur in shallow beds, sometimes of fairly uniform thickness over a considerable area, but in most cases of irregular thickness. These beds are always near the surface. The best natural bonded moulding sands are composed of fairly pure silica sand and plastic refractory clay. The clay bonding content varies approximately from 3 per cent to 30 per cent.

Every province except Prince Edward Island produces natural bonded moulding sand. At one time that province produced small quantities for local use. By far the greater part of the output, generally over 90 per cent, comes from the Niagara Peninsula in Ontario. Occasionally, new deposits have been opened up, mostly in Ontario and in the Prairie Provinces.

The results of a general investigation of moulding sands in Canada were published in 1936 by the Bureau of Mines, Ottawa, in Report No. 767 (No. 768, French edition), "Natural Bonded Moulding Sands of Canada". This report directs attention to the large number of deposits from which supplies have been obtained for local foundries and the possibility of replacing imported material with Canadian sands.

A complete moulding sand research laboratory forms part of a well equipped experimental foundry for the casting of all metals that was installed recently in the Physical Metallurgy Research Laboratories of the Bureau of Mines, Ottawa. In the moulding sand laboratory, comparative tests are being made on moulding and core sands for individual foundries. Tests results are designed to indicate which sand is the most economical from the viewpoint of binder consumption, cleaning castings, etc.

THE STONE INDUSTRY IN CANADA

The Stone Industry in Canada comprises two main divisions: (1) The Stone Quarrying Industry, including quarries and dressing works operated in conjunction with quarries, and (2) The Stone Products Industry, comprising the operations of firms having no quarries but who operate dressing works where stone for building and monumental purposes is cut, polished or otherwise finished. In the Census of Industry, statistics on the stone quarrying industry are included under Mining, while statistics of the stone products industry are included under Manufactures. For convenience, this report carries data for both of these industries.

Production by these industries during the year totalled \$11,472,518, which figure includes the value of the quarry output and the value added by manufacturing in the secondary stone industry. Salaried employees and wage-earners employed in 1945 numbered 3,209, and their combined earnings amounted to \$4,780,240.

The two industries are treated separately in the following review.

1. Primary Production—The Stone Quarrying Industry

The kinds of stone quarried in Canada include granite (trap rock, syenite and other igneous rock), limestone, marble, sandstone, and slate. Rocks of the igneous areas of British Columbia, Manitoba, Ontario, Quebec and the Maritime Provinces exhibit a wide range of physical characteristics, some varieties being especially noted for their richness of colour and beauty of crystallization. Sedimentary rocks, including limestones, sandstones and marbles are worked at various locations and the quarries operating in these different formations not only yield high class structural and decorative products but also provide materials for the chemical and allied industries.

The gross value of all varieties of new stone produced in Canada during 1945 amounted to \$8,166,700, compared with \$7,159,177 in 1944. The tonnage shipped in 1945 included 221,630 tons of granite (igneous rock) valued at \$1,284,748; 5,677,192 tons of limestone valued at \$6,284,379; 13,388 tons of marble valued at \$113,337; 291,430 tons of sandstone valued at \$466,397 and 1,915 tons of slate valued at \$17,839. Quarries in Quebec contributed 47.8 per cent of the

total value in 1945; Ontario accounted for 35.7 per cent; British Columbia for 5.7 per cent; New Brunswick for 4.6 per cent; Nova Scotia for 4.3 per cent; Manitoba for 1.1 per cent and Alberta for 0.8 per cent.

Table 410.—Principal Statistics of the Stone Quarrying Industry, by Provinces, 1944 and 1945

Province	Number of quarries	Average number of employees	Salaries and wages	Cost of fuel and electricity	Process supplies	Gross value of production
			\$	\$	\$	\$
1944						
Nova Scotia.....	39	57	56,132	12,871	7,700	225,113
New Brunswick.....	8	84	113,390	20,634	9,074	244,187
Quebec.....	151	1,280	1,642,193	354,877	492,990	3,334,811
Ontario.....	189	641	1,165,191	255,249	304,971	2,909,980
Manitoba.....	7	16	15,464	4,386	2,181	53,554
Saskatchewan.....	2					
Alberta.....	70	106	162,319	23,039	9,908	43,049
British Columbia.....						348,483
Canada.....	466	2,164	3,154,689	671,056	826,824	7,159,177
1945						
Nova Scotia.....	36	100	77,076	12,450	9,229	315,179
New Brunswick.....	9	68	75,003	7,106	1,926	328,509
Quebec.....	140	1,274	1,738,960	406,695	440,339	4,056,272
Ontario.....	169	604	1,050,331	269,411	272,711	2,926,694
Manitoba.....	7	24	32,194	5,992	6,082	85,798
Saskatchewan.....	3					
Alberta.....	65	84	141,083	9,457	10,317	54,962
British Columbia.....						399,286
Canada.....	429	2,154	3,114,647	711,111	740,604	8,166,700

Table 411.—Principal Statistics of the Stone Quarrying Industry in Canada, 1943-1945

	1943	1944	1945
Number of firms.....	407	405	361
Capital employed..... \$	10,954,939	(*)	(*)
Number of employees—On salary.....	320	255	242
On wages.....	2,153	1,909	1,912
Total.....	2,473	2,164	2,154
Salaries and wages—Salaries..... \$	484,990	441,257	412,711
Wages..... \$	3,044,765	2,713,432	2,701,936
Total..... \$	3,529,755	3,154,689	3,114,647
Selling value of products (gross)..... \$	7,964,179	7,159,177	8,166,700
Cost of fuel and electricity..... \$	678,409	671,056	711,111
Process supplies used..... \$	855,218	826,824	740,604
Selling value of products (net)..... \$	6,430,552	5,661,297	6,714,985

(*) Not recorded in 1944 or 1945.

Table 412.—Average Number of Wage-Earners, by Months, 1944 and 1945

Month	1944				1945			
	Quarry		Dressing works		Quarry		Dressing works	
	Male	Female	Male	Female	Male	Female	Male	Female
January.....	1,143	1	255	5	990	1	263	3
February.....	1,160	1	242	5	990	1	264	3
March.....	1,190	1	239	5	1,076	1	315	3
April.....	1,415	1	268	5	1,353	1	293	3
May.....	1,753	2	313	5	1,717	1	323	3
June.....	1,957	4	345	5	1,810	1	331	3
July.....	1,936	4	364	5	1,837	1	369	3
August.....	1,943	4	330	5	1,915	1	346	3
September.....	1,869	4	336	5	1,943	1	341	3
October.....	1,789	4	344	5	1,994	1	386	3
November.....	1,609	2	354	5	1,719	1	382	3
December.....	1,242	1	320	5	1,316	1	373	3
Average.....	1,590	3	311	5	1,572	1	336	3

Table 413.—Production (Sales) of Stone from Canadian Quarries, by Kinds and by Provinces, 1944 and 1945

Province	Granite (a)	Limestone (b)	Marble	Sandstone	Slate	Total
1944						
Nova Scotia.....	tons 1,886	50,734		45,813		98,433
	\$ 37,532	123,613		63,968		225,113
New Brunswick.....	tons 1,857	66,731		1,400		69,988
	\$ 47,504	165,258		31,425		244,187
Quebec.....	tons 127,544	2,370,141	6,489	89,470	198	2,593,842
	\$ 830,238	2,349,177	50,569	104,629	198	3,334,811
Ontario.....	tons 125,604	2,852,241	5,215	5,223		2,988,283
	\$ 307,497	2,549,402	32,650	20,431		2,999,980
Manitoba.....	tons 357	31,572				31,929
	\$ 4,967	48,587				53,554
Alberta.....	tons	12,726				12,726
	\$	43,049				43,049
British Columbia.....	tons 12,716	181,141	125	4,860	949	199,791
	\$ 76,052	249,373	2,155	3,000	17,903	348,483
Canada.....	tons 269,964	5,565,286	11,829	146,766	1,147	5,994,992
	\$ 1,303,790	5,528,459	85,374	223,453	18,101	7,159,177
1945						
Nova Scotia.....	tons 379	60,387		62,668		123,434
	\$ 25,695	158,644		130,840		315,179
New Brunswick.....	tons 4,669	84,639		10,020		99,328
	\$ 41,983	198,326		88,200		328,509
Quebec.....	tons 77,145	2,372,758	7,410	211,902	946	2,670,161
	\$ 887,113	2,877,684	65,556	224,352	1,567	4,056,272
Ontario.....	tons 109,286	2,833,573	5,818	3,680		2,952,357
	\$ 279,105	2,582,663	45,081	19,845		2,926,694
Manitoba.....	tons 425	62,201				62,626
	\$ 6,130	79,668				85,798
Alberta.....	tons	13,528				13,528
	\$	54,962				54,962
British Columbia.....	tons 29,726	250,106	160	3,160	969	284,121
	\$ 44,722	332,432	2,700	3,160	16,272	399,286
Canada.....	tons 221,630	5,677,192	13,388	291,430	1,915	6,205,555
	\$ 1,284,748	6,284,379	113,337	466,397	17,839	8,166,700

(a) All igneous rocks included.

(b) Includes dolomite, also marl for agricultural purposes.

NOTE: Not included in the above limestone statistics are 1,849,258 tons of limestone consumed in the cement industry in 1945 and 1,865,597 tons in 1944. Also, the limestone used in the lime industry is not included; it is estimated that approximately 1,482,077 tons of limestone were burned in the manufacture of lime in 1945 and 1,571,451 tons in 1944.

Table 414.—Production (Sales) of Stone(*) from Canadian Quarries, by Provinces, Showing Purposes for which Used, 1944 and 1945

For use as follows:	Nova Scotia	New Brunswick	Quebec	Ontario	Mani- toba	Alberta	British Columbia	Canada
1944								
Building stone—Rough.....	tons 372	80	7,275	3,414	245		1,436	12,822
	\$ 4,719	962	23,391	11,096	2,003		3,624	45,795
Dressed.....	tons 620	6,136	3,337	227				10,320
	\$ 31,890	261,228	47,825	9,964				350,407
Monumental and ornamental stone—Rough.....	tons 37	1,488	6,777				1,305	9,607
	\$ 552	11,625	96,552				13,800	122,529
Dressed.....	tons 349	188	5,200	174	120		304	6,335
	\$ 33,980	33,074	491,894	918	4,575		50,594	615,035
Flagstone.....	tons			1,315	27			1,342
	\$			4,748	180			4,928
Curbstone.....	tons		200					200
	\$		1,298					1,298
Paving blocks.....	tons		1,250	300				1,550
	\$		7,874	600				8,474
Lining open-hearth furnaces....	tons 8,930							8,930
	\$ 16,967							16,967
Chemical— Flux in iron and steel furnaces.	tons 57	1,005	414,625	4,457	1,000	589		421,733
	\$ 110	854	373,334	7,480	2,500	976		385,254

(*) Includes the production of slate and marl.

Table 414.—Production (Sales) of Stone from Canadian Quarries, by Provinces, Showing Purposes for which Used, 1944 and 1945—Continued

For use as follows:	Nova Scotia	New Brunswick	Quebec	Ontario	Mani- toba	Alberta	British Columbia	Canada
1944—Concluded								
Chemical—Concluded								
Flux in non-ferrous smelters..... tons			49,729	117,099			37,491	204,319
\$			26,706	87,188			24,406	138,300
Glass factories..... tons			391			3,742		4,133
\$			1,466			5,613		7,079
Pulp and paper mills..... tons		4,188	129,642	25,375	1,741		47,719	208,665
\$		7,748	179,815	82,986	1,913		101,675	374,137
Sugar refineries..... tons				4,973				4,973
\$				4,231				4,231
Other chemical uses..... tons				244,592			20,942	265,534
\$				240,107			21,264	261,371
Pulverized stone—								
Whiting (substitute)..... tons				2,732			233	2,965
\$				16,611			2,996	19,607
Asphalt filler..... tons			9,031	4,153			966	14,427
\$		2,493	32,910	14,853			4,830	55,086
Dusting coal mines..... tons						3,030	473	3,503
\$						12,120	3,193	15,313
Agricultural purposes and								
fertilizer plants..... tons	41,454	62,467	171,637	32,074	1,833	1,514	5,966	316,945
\$	103,367	157,353	239,521	74,337	4,923	6,056	15,485	601,042
Other uses..... tons			80	10,547	2,282		23	12,932
\$			465	35,090	2,028		207	37,790
Crushed stone for manufacture								
of artificial stone..... tons			172	82				254
\$			786	255				1,041
Roofing granules..... tons				35,031			952	35,983
\$				126,135			17,975	144,110
Poultry grit..... tons	73		1,910	8,318		3,440	1,466	15,207
\$	786		10,628	49,752		16,760	7,317	85,243
Stucco dash..... tons			531	97			522	1,150
\$			3,439	582			5,314	9,335
Terrazzo chips..... tons			1,327	1,465				2,792
\$			7,283	10,850				18,133
Rock wool..... tons				7,130				7,130
\$				6,890				6,890
Rubble and riprap..... tons	6,441	900	101,598	84,207	1,600		6,855	201,601
\$	10,949	1,425	88,722	80,683	1,810		4,234	187,823
Crushed stone—								
Concrete aggregate..... tons	30,000		1,293,101	514,841	14,393			1,852,335
\$	33,300		1,152,845	400,144	14,403			1,600,692
Road metal..... tons	10,500		382,773	1,030,303	4,443		70,239	1,498,258
\$	18,000		351,067	911,685	3,761		68,283	1,352,796
Railroad ballast..... tons			424,077	442,094	561		2,310	869,042
\$			356,067	329,580	514		2,310	688,471
Total Canada..... tons	98,433	69,988	2,593,842	2,988,283	31,929	12,726	199,791	5,994,992
\$	225,113	244,187	3,334,811	2,909,980	53,554	43,049	348,483	7,159,177
Per cent of total..... Quantity	1.64	1.17	43.27	49.85	0.53	0.21	3.33	100.00
Value	3.14	3.41	46.58	40.65	0.75	0.60	4.87	100.00
1945								
Building stone—Rough..... tons	600	67	6,568	29,194	271		2,319	39,019
\$	6,848	101	33,278	44,808	2,309		6,324	93,668
Dressed..... tons		1,040	11,225	5,058	359		10	17,692
\$		80,000	485,918	75,580	15,821		414	657,733
Monumental and ornamental								
stone—Rough..... tons	50	336	8,213	91			1,600	10,290
\$	800	3,083	121,096	2,957			16,000	143,916
Dressed..... tons	329	190	5,223		150		47	5,939
\$	24,895	27,766	575,912		5,700		8,214	642,487
Flagstone..... tons		20	540	1,710	65			2,335
\$		200	2,700	7,662	395			10,957
Curbstone..... tons			90					90
\$			668					668
Paving blocks..... tons			411	300				711
\$			3,126	3,600				6,726
Lining open-hearth furnaces..... tons	14,760							14,760
\$	28,042							28,042
Chemical—								
Flux in iron and steel furnaces..... tons			168	385,662	3,966	800	10	390,606
\$			168	341,165	6,603	2,000	200	350,136
Flux in non-ferrous smelters..... tons			2,110	99,861			45,221	148,192
\$			2,872	74,869			61,178	138,919
Glass factories..... tons			1,192			4,346		5,538
\$			5,673			17,380		23,053
Pulp and paper mills..... tons	3,650	3,077	128,895	27,561	1,860		47,008	212,051
\$	18,714	5,693	189,567	85,114	2,044		111,923	413,055

Table 414.—Production (Sales) of Stone from Canadian Quarries, by Provinces, Showing Purposes for which Used, 1944 and 1945—Concluded

For use as follows:	Nova Scotia	New Brunswick	Quebec	Ontario	Mani- toba	Alberta	British Columbia	Canada
<i>1945—Concluded</i>								
Chemical—Concluded								
Sugar refineries..... tons		11		8,213			1	8,225
\$		52		6,981			12	7,045
Other chemical uses..... tons				257,376			29,526	286,902
\$				253,435			29,526	282,961
Pulverized stone—								
Whiting (substitute)..... tons			3,662	4,309			232	8,203
\$			36,617	26,165			2,702	65,484
Asphalt filler..... tons	1		6,023	4,310			517	10,851
\$	29		21,581	14,973			2,585	39,168
Dusting coal mines..... tons						2,992	313	3,305
\$						11,970	2,112	14,082
Agricultural purposes and fertilizer plants..... tons	41,067	81,319	258,828	31,649	1,664	1,480	3,572	419,579
\$	109,277	192,400	495,851	74,579	3,730	5,920	10,045	891,802
Other uses..... tons	869		10,846	13,769	3,391		30	28,905
\$	2,173		39,704	44,252	3,411		270	89,810
Crushed stone for manufacture of artificial stone..... tons			394	668				1,062
\$			2,330	2,489				4,819
Roofing granules..... tons			100	43,261			969	44,330
\$			150	125,016			16,272	141,438
Poultry grit..... tons	40		1,243	7,178		3,490	1,617	13,568
\$	409		5,374	39,885		16,960	8,280	70,906
Stucco dash..... tons			1,350	291			1,488	3,129
\$			9,500	2,778			17,507	29,585
Terrazzo chips..... tons			2,657	2,127				4,784
\$			17,106	21,724				38,830
Rock wool..... tons				1,423				1,423
\$				1,886				1,886
Rubble and riprap..... tons	1,168	13,268	125,004	73,598	120		28,622	241,780
\$	2,192	19,234	124,469	76,480	240		14,403	237,018
Crushed stone—								
Concrete aggregate..... tons			1,302,572	567,811	37,657	420		1,908,460
\$			1,142,020	417,242	36,262	732		1,596,256
Road metal..... tons	60,900		430,226	931,143	12,711		117,859	1,552,839
\$	121,800		426,000	822,998	8,888		88,359	1,468,045
Railroad ballast..... tons			361,621	455,794	412		3,160	820,937
\$			314,592	360,058	395		3,160	678,205
Total Canada..... tons	123,434	99,323	2,670,161	2,952,357	62,626	13,528	284,121	6,205,555
\$	315,179	328,509	4,056,272	2,926,672	85,798	54,962	399,286	8,166,700
Per cent of total..... Quantity	1.98	1.60	43.03	47.58	1.01	0.22	4.58	100.00
Value	3.86	4.02	49.67	35.84	1.05	0.67	4.89	100.00

Table 415.—Production (Sales) of Stone from Canadian Quarries, by Kinds, Showing Purposes for which Used, 1944 and 1945

For use as follows:	Granite (a)	Limestone (b)	Marble	Sandstone	Slate	Total
<i>1944</i>						
Building stone—Rough..... tons	4,260	4,770	142	3,650		12,822
\$	10,033	11,149	9,268	15,345		45,795
Dressed..... tons	1,592	7,458	120	1,150		10,320
\$	83,485	214,037	18,135	34,750		350,407
Monumental and ornamental stone—						
Rough..... tons	9,607					9,607
\$	122,529					122,529
Dressed..... tons	6,041	120		174		6,335
\$	609,542	4,575		918		615,035
Flagstone..... tons		907		455		1,342
\$		1,336		3,592		4,928
Curbstone..... tons	200					200
\$	1,298					1,298
Paving blocks..... tons	1,235			315		1,550
\$	7,770			704		8,474
Lining open-hearth furnaces..... tons		8,930				8,930
\$		16,967				16,967

For footnotes, see end of table, p. 251.

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Table 415.—Production (Sales) of Stone from Canadian Quarries, by Kinds, Showing Purposes for which Used, 1944 and 1945—Continued

For use as follows:	Granite (a)	Limestone (b)	Marble	Sandstone	Slate	Total
<i>1944—Concluded</i>						
Chemical—						
Flux in iron and steel furnaces..... tons		421,713	20			421,733
Flux in non-ferrous smelters..... tons		384,924	330			385,254
Glass factories..... tons		204,319				204,319
Pulp and paper mills..... tons		138,300				138,300
Sugar refineries..... tons		4,133				4,133
Other chemical uses..... tons		7,079				7,079
Pulverized stone—		208,665				208,665
Whiting (substitute)..... tons		374,137				374,137
Asphalt filler..... tons		4,978				4,978
Dusting coal mines..... tons		4,231				4,231
Agricultural purposes and fertilizer plants..... tons		265,534				265,534
Other uses..... tons		261,371				261,371
Crushed stone for manufacture of artificial stone..... tons		2,915	50			2,965
Roofing granules..... tons		18,807	800			19,607
Poultry grit..... tons		14,427				14,427
Stucco dash..... tons		55,086				55,086
Terrazzo chips..... tons		3,503				3,503
Rock wool..... tons		15,313				15,313
Rubble and riprap..... tons	400	316,545				316,945
Crushed stone—	2,825	598,217				601,042
Concrete aggregate..... tons		12,502	430			12,932
Road metal..... tons		35,925	1,865			37,790
Railroad ballast..... tons		82	172			254
Building stone—		265	786			1,041
Rough..... tons		1,995			949	35,983
Dressed..... tons	33,039	2,476				144,110
Monumental and ornamental stone—	123,732	10,251	4,677			15,207
Rough..... tons	279	53,030	28,513			85,243
Dressed..... tons	2,800	565	581			1,150
Flagstone..... tons	4	4,826	4,459			9,335
Curbstone..... tons	70	270	2,522			2,792
Paving blocks..... tons		810	17,323			18,133
Lining open-hearth furnaces..... tons		7,130				7,130
Chemical—		6,890				6,890
Flux in iron and steel furnaces..... tons		29,265	3,115	15,131	198	201,601
Flux in non-ferrous smelters..... tons		24,021	3,915	23,395	198	187,823
Glass factories..... tons		54,476		46,010		1,852,335
Pulp and paper mills..... tons		83,951		61,192		1,600,692
Sugar refineries..... tons		129,566		18,318		1,498,258
Other chemical uses..... tons		231,734		30,094		1,352,796
Pulverized stone—				61,583		869,042
Whiting (substitute)..... tons				53,463		685,471
Asphalt filler..... tons						
Dusting coal mines..... tons						
Agricultural purposes and fertilizer plants..... tons						
Other uses..... tons						
Total Canada (b)..... tons	269,964	5,565,286	11,829	146,766	1,147	5,994,992
	1,303,790	5,528,459	85,374	223,453	18,101	7,159,177
<i>1945</i>						
Building stone—						
Rough..... tons	3,117	33,431	135	2,336		39,019
Dressed..... tons	14,198	57,930	8,809	12,731		93,668
Monumental and ornamental stone—	1,267	15,056	119	1,250		17,692
Rough..... tons	97,098	464,411	18,224	78,000		657,733
Dressed..... tons	10,199		91			10,290
Flagstone..... tons	140,959		2,957			143,916
Curbstone..... tons	5,789	150				5,939
Paving blocks..... tons	636,787	5,700				642,487
Lining open-hearth furnaces..... tons		1,071		1,264		2,335
Chemical—		3,845		7,112		10,957
Flux in iron and steel furnaces..... tons	90					90
Flux in non-ferrous smelters..... tons	668					668
Glass factories..... tons	411			300		711
Pulp and paper mills..... tons	3,126			3,600		6,726
Sugar refineries..... tons		14,760				14,760
Other chemical uses..... tons		28,042				28,042
Pulverized stone—		390,596	10			390,606
Whiting (substitute)..... tons		349,936	200			350,136
Asphalt filler..... tons		148,192				148,192
Dusting coal mines..... tons		138,919				138,919
Agricultural purposes and fertilizer plants..... tons		4,496	1,042			5,538
Other uses..... tons		17,943	5,110			23,053
Crushed stone—		212,051				212,051
Concrete aggregate..... tons		413,055				413,055
Road metal..... tons		8,225				8,225
Railroad ballast..... tons		7,045				7,045

For footnotes, see end of table, p. 251.

Table 415.—Production (Sales) of Stone from Canadian Quarries, by Kinds, Showing Purposes for which Used, 1944 and 1945—Concluded

For use as follows:	Granite (a)	Limestone (b)	Marble	Sandstone	Slate	Total
1945—Concluded						
Chemical— <i>Concluded</i>						
Other chemical uses.....tons		286,902				286,902
\$		282,961				282,961
Pulverized stone—						
Whiting (substitute).....tons		8,153	50			8,203
\$		64,984	500			65,484
Asphalt filler.....tons		10,851				10,851
\$		39,168				39,168
Dusting coal mines.....tons		3,305				3,305
\$		14,082				14,082
Agricultural purposes and fertilizer plants.....tons		419,579				419,579
\$		891,802				891,802
Other uses.....tons		28,305	600			28,905
\$		87,410	2,400			89,810
Crushed stone for manufacture of artificial stone.....tons		668	394			1,062
\$		2,489	2,330			4,819
Roofing granules.....tons	43,261	100			969	44,330
\$	125,016	150			16,272	141,438
Poultry grit.....tons	485	9,000	4,083			13,568
\$	4,445	43,862	22,599			70,906
Stucco dash.....tons	240	1,439	1,450			3,129
\$	2,526	15,559	11,500			29,585
Terrazzo chips.....tons		520	4,264			4,784
\$		1,560	37,270			38,830
Rock wool.....tons		1,423				1,423
\$		1,886				1,886
Rubble and riprap.....tons	40,231	186,561	1,150	12,892	946	241,780
\$	31,530	182,907	1,438	19,576	1,567	237,018
Crushed stone—						
Concrete aggregate.....tons	38,871	1,849,865		19,724		1,908,460
\$	61,977	1,502,390		31,889		1,596,256
Road metal.....tons	77,669	1,392,566		82,604		1,552,839
\$	166,418	1,143,079		158,548		1,468,045
Railroad ballast.....tons		649,927		171,060		820,987
\$		523,264		154,941		678,205
Total Canada (b).....tons	221,630	5,677,192	13,388	291,430	1,915	6,205,555
\$	1,284,748	6,284,379	113,337	466,397	17,839	8,166,700

(a) Includes all igneous rock.

(b) Does not include limestone used in Canadian lime and cement industries but includes marl used for agricultural purposes.

Table 416.—Production of Stone for Building Purposes, Chemical Use, Cement Manufacture, Concrete Aggregate, Road Metal and Railroad Ballast, 1935-1945

Year	Building stone (a)	For chemical purposes (b)	For concrete aggregate	For road metal	For railroad ballast	For cement manufac- ture (c)
1935.....tons	200,899	537,799	804,719	1,976,363	351,302	818,443
\$	1,258,741	483,709	523,847	1,987,351	211,993	
1936.....tons	42,335	615,207	1,014,145	1,903,927	784,081	1,180,358
\$	714,616	553,597	730,617	1,653,134	659,656	
1937.....tons	49,098	693,947	1,497,655	3,169,136	642,248	1,465,168
\$	746,370	626,297	1,214,181	2,522,080	570,606	
1938.....tons	49,666	551,737	981,739	2,721,922	86,019	1,358,689
\$	725,402	468,000	791,971	2,347,010	58,816	
1939.....tons	71,288	577,278	1,344,636	2,131,306	600,266	1,407,099
\$	1,344,340	523,579	1,109,028	1,773,337	522,882	
1940.....tons	97,336	725,685	2,673,078	2,300,613	896,408	1,784,291
\$	722,514	681,796	2,171,487	1,885,744	741,772	
1941.....tons	54,262	965,690	2,581,583	2,958,613	446,505	2,113,618
\$	653,077	889,574	1,986,226	2,484,393	322,348	
1942.....tons	24,897	1,236,044	2,924,737	2,275,706	683,317	2,186,248
\$	361,781	1,651,982	2,424,357	1,877,473	527,814	
1943.....tons	17,087	1,329,226	1,981,222	2,108,428	852,928	1,994,202
\$	314,428	1,330,127	1,727,889	1,989,609	704,389	
1944.....tons	23,142	1,109,362	1,852,335	1,498,258	869,042	1,999,900
\$	396,202	1,170,372	1,600,692	1,352,796	688,471	
1945.....tons	56,711	1,051,514	1,908,460	1,552,839	820,987	1,919,883
\$	751,401	1,215,169	1,596,256	1,468,045	678,205	

(a) Does not include monumental or ornamental stone.

(b) Does not include limestone used in Canadian lime industry which totalled 1,482,077 tons in 1945.

(c) Includes shale in 1938-1945: 1938—13,821 tons; 1939—27,241 tons; 1940—18,347 tons; 1941—26,837 tons; 1942—30,493 tons; 1943—75,460 tons; 1944—74,303 tons; 1945—70,600 tons.

Table 417.—Imports into Canada and Exports of Stone, by Kinds, 1944 and 1945

	1944		1945	
	Quantity	Value \$	Quantity	Value \$
IMPORTS				
Building stone, n.o.p.....cwt.	36,972	15,120	106,159	48,997
Curling stones and handles therefor.....pair	396	10,667	231	5,982
Granite, rough, not hammered or chiselled.....		53,707		42,942
Granite, sawn only.....		15,788		22,964
Granite, monuments.....				
Granite, manufactures of, n.o.p.....				
Marble, rough, not hammered or chiselled.....		9,430		9,877
Marble, sawn or sand rubbed, not polished.....		8,844		9,139
Marble, not further manufactured than sawn for tombstones.....		22,653		41,229
Marble, manufactures of, n.o.p.....		38,036		62,045
Refuse stone.....		7,889		10,252
Slate roofing.....ton	734,141	398,378	705,716	481,348
Slate mantels and manufactures of slate, n.o.p.....square	720	7,986	439	5,276
Chalk, china, cornwall or cliff stone and mica schist.....		28,075		26,131
Mineral wool.....ton	1,310	147,862	4,495	16,967
Whiting, gilders' whiting and Paris white.....ton	13,432	279,112	14,159	460,677
Manufactures of stone, n.o.p.....		25,067		307,201
Chalk, prepared.....		19,525		27,010
Pumice and pumice stone and lava tufa.....		27,880		6,425
Grindstones, not mounted and not less than 36 inches in diameter.....No.	578	59,211	466	45,494
Grindstones, n.o.p.....No.	672	2,095	549	2,381
Burrstones, rough, in blocks.....No.	62	1,062	27	779
Ganister.....ton	347	2,463	425	3,384
Total.....		1,206,935		1,681,541
EXPORTS				
Crushed stone.....ton	597	735	904	858
Granite and marble, unwrought.....ton	3,871	42,567	3,835	48,606
Dressed stone of all kinds.....		5,713		7,331
Grindstones, manufactured.....		211		19,519
Total.....		49,226		76,314

GRANITE

Table 418.—Production of Granite(*) in Canada, 1935-1945

Year	Short tons	\$	Year	Short tons	\$
1935.....	326,354	1,126,287	1940.....	1,147,747	1,884,410
1936.....	941,743	1,319,313	1941.....	600,922	1,498,786
1937.....	1,135,099	1,827,433	1942.....	1,366,425	1,946,249
1938.....	705,307	1,379,417	1943.....	780,422	1,522,072
1939.....	1,102,395	2,119,501	1944.....	269,964	1,303,700
			1945.....	221,630	1,284,748

(*) Includes all igneous rock.

The annual review by the Bureau of Mines gives the following information with regard to the quarrying of granite in Canada:

"Large areas in Canada are underlain by granite and other related crystalline igneous rocks, and in a number of localities quarries in such rocks have been opened up for the production of building stone, monumental stock, riprap, etc. More than 90 per cent of the Canadian output of granite in 1945 was supplied by Ontario and Quebec, and the remainder came from Nova Scotia, New Brunswick, Manitoba and British Columbia.

"Prior to the war most of the Canadian production of granite was used for riprap and crushed stone and in the construction of public and semi-public buildings, and smaller quantities for monumental stock, but during the war there was little demand for dimensioned stone for building so that many of the quarries producing only this type of stone were forced to close. There was sufficient demand, however, for monumental stock for the domestic market and for export to enable a number of firms to keep their dressing sheds in operation on a small scale, and some of the larger quarries favourably situated were able to supply any demand for riprap that arose. With the prospects of extensive building construction, these companies can turn again to the production of building stone with little loss of time.

"Many of the Canadian granites are suitable for monumental use, and prior to the war much of this material was used within a limited radius of various quarries, but appreciable quantities of special monumental stock such as 'reds' and 'black granites' were imported from the Scandinavian countries, notably Finland and Sweden. When shipments were cut off, Canada and the United States had to depend on their own quarries. In Canada a number of quarries produce granite of pleasing characteristics for monumental use and in the past few years there has been a small but steady increase in the domestic demand for such stone. Moreover, numerous requests from the United States for samples have been received by Canadian firms, and exports to that country have shown an appreciable increase.

"Quebec continued to furnish most of the granite used in building, road foundation and other heavy construction, the leading producing areas being Stanstead, Stanstead county; St. Samuel, Frontenac county; Rivière-à-Pierre, Portneuf county; and Lake St. John district. Granite for monumental use is produced in the Maritime Provinces, and in Quebec, Ontario, Manitoba, and British Columbia. 'Black granite' is produced mainly in the vicinity of Lake St. John and from quarries along the north shore of Lake Superior.

"In Nova Scotia and New Brunswick the industry was again comparatively quiet. Production in Nova Scotia came from well-established firms in Shelbourne and Nictaux West areas and most of the material was monumental stock. In New Brunswick, the granite quarry at Hampstead was in production, and two firms at St. George produced for the monumental trade. A few tons of 'black granite' was produced from the quarry at Lake Digdequash.

"In Quebec, grey granite comprises over half the total output for the province and is quarried mainly in Stanstead district. At St. Gedeon and at St. Joseph d'Alma in the Lake St. John district, Le Granit National Ltée produces 'black granite', which finds a ready market for monumental use and for building trim. Brodies Limited, Montreal, has its new cutting shed, erected to replace the shed destroyed by fire, in full operation. The company obtains its granite from Graniteville, Stanstead county; from Guenette, Labelle county; and from Mount Johnson, near Iberville. Stanstead Granite Quarries Company of Beebe, obtained its grey granite stock from quarries at Graniteville; its rough monumental stock was purchased from various other localities. Prospecting for some of the coloured granites that are in demand for monumental use was active in the province. Granite of deep red colour and pleasing texture is being developed in several districts, notably, near Grenville in Grenville county; and in the vicinity of Donnacona, Portneuf county.

"In Ontario, the Ontario Rock Company, Toronto, quarried a trap rock at Havelock, Peterborough county, which is used mainly for road foundations, railroad ballast, and concrete aggregate.

"In Manitoba and British Columbia, there were no developments of special importance during the year under review."

LIMESTONE

Table 419.—Production of Limestone(*) in Canada, 1935-1945

Year	Short tons	\$	Year	Short tons	\$
1935.....	3,631,665	3,253,573	1941.....	7,151,049	6,057,727
1936.....	3,731,548	3,143,872	1942.....	6,442,583	6,468,525
1937.....	5,542,806	4,673,942	1943.....	6,265,181	6,105,749
1938.....	4,288,507	3,864,619	1944.....	5,565,286	5,528,459
1939.....	4,149,589	3,817,551	1945.....	5,677,192	6,284,379
1940.....	6,108,591	5,126,075			

(*) Includes dolomite and marl; production of marl totalled 22,913 tons in 1943; 19,848 tons in 1944 and 14,148 tons in 1945.

With regard to limestone production, the Bureau of Mines has reported as follows:

"Quarries for the production of limestone for building purposes are worked in Quebec, Ontario and Manitoba. Modern requirements of the building-stone industry call for blocks of stone of large dimensions from which are sawn slabs and blocks of the exact size required for constructing the building. Although limestone is abundant in Canada the heavily bedded variety of desirable texture, free from cracks and other defects, and capable of being carved and otherwise worked, is not plentiful.

"During the war the construction of buildings of the type requiring cut stone was drastically curtailed and the production of building stone declined almost to the vanishing point, and such shipments as were made were from stock. Stocks are now depleted and with the construction of many buildings planned for the coming years the outlook for the industry engaged in the production of structural limestone is distinctly promising.

"In Quebec, the quarries yielding heavily bedded building stone are at St. Marc des Carrieres in Portneuf county, and in the vicinity of Montreal. At both localities a grey limestone is obtained.

"In Ontario, heavily bedded silver-grey limestone is quarried from extensive deposits near Queenston in the Niagara peninsula, and smaller quantities of buff and variegated buff and grey limestone are also obtained. At Longford Mills, near Orillia, buff, silver grey, and brown limestone, suitable for use as building stone and as marble, is available, but the quarries have been inactive during the past several years.

"In Manitoba, quarries are near Tyndall. They yield mottled buff, mottled grey, and mottled variegated limestone suitable for exteriors of buildings and for use as interior decorative stone. There has been very little production in recent years.

"In addition to the large quarries, the products of which normally have a wide shipping range, small quarries producing rough building stone for local use are worked intermittently near Quebec City, Montreal and Hull, in Quebec; and at Ottawa, Kingston and Wiarton in Ontario. Rubble is the chief product.

"For industrial use limestone is marketed in a variety of forms ranging from huge squared blocks of dimension stone used in construction to extremely fine dust used chiefly as a mineral filler. For certain uses (in the wood pulp industry, for example) the limestone quarried requires little or no processing, but most of the output is crushed and screened for use as road metal, concrete aggregate, railroad ballast, and as flux in metallurgical plants. Large quantities are used in the manufacture of Portland cement, lime and various chemical products. Most of the limestone used in chemical and metallurgical industries is of the high calcium variety, but dolomite is rapidly increasing in importance as an industrial raw material.

"Argillaceous dolomite is used for the manufacture of rock wool, a widely used insulating material. Five new plants, two in British Columbia, and one each in Nova Scotia, Quebec, and Ontario, were being built in 1945 and one in Ontario, previously destroyed by fire, is being rebuilt.

"Pure dolomite has become an important source of magnesia, and during the latter years of World War II was an important source of magnesium metal. Magnesia and basic magnesium carbonate are made from calcined dolomite by the Pattinson process.

"Dead-burned dolomite is widely used as a refractory material in basic open hearth furnaces in the steel industry. The first Canadian plant to produce dead-burned dolomite was built at Dundas, Ontario, in 1945.

"Magnesitic dolomite is processed at Kilmar, Quebec, for the production of refractory products. Brucitic limestone is processed at Wakefield, Quebec, for the production of magnesia and hydrated lime.

"The use of limestone in agriculture is capable of very extensive development. Though the necessity for applying limestone or lime to agricultural land to remedy deficiencies of calcium and magnesium, to neutralize soil acidity, and to maintain or increase soil fertility has been emphasized for many years, the quantity so used in Canada is still relatively small, whereas the agricultural use of limestone could well constitute one of its most important uses both from the economic and tonnage viewpoints."

MARBLE

Table 420.—Production of Marble in Canada, 1935-1945

Year	Short tons	\$	Year	Short tons	\$
1935.....	15,975	85,369	1940.....	13,739	75,409
1936.....	22,866	169,698	1941.....	17,649	126,081
1937.....	21,642	88,595	1942.....	13,824	88,209
1938.....	19,375	87,274	1943.....	11,848	68,022
1939.....	14,124	200,054	1944.....	11,829	85,374
			1945.....	13,388	113,387

The following excerpt is from the annual review by the Bureau of Mines:

"The marble industry in Canada, in common with all belligerent countries, was relatively inactive during the war because most of the buildings erected were of the strictly utilitarian type, in which very little marble was used. With the resumption of construction of the ornamental type of buildings the demand for marble is increasing and preparations were made late in 1945 for the reopening in 1946 of quarries that have been closed for several years. Foreign marble, which has always largely dominated the Canadian market, is now obtainable only with difficulty and at higher prices than formerly because of depleted European stocks, damage to quarries and equipment during the war, and because of labour trouble. Thus the outlook for increased production of domestic marble in the near future is good.

"Canada is well supplied with deposits of marble, and quarries are operated in Quebec, Ontario, Manitoba, and British Columbia. The products in recent years have been terrazzo chips, stucco dash, poultry grit, marble flour, whiting substitute, rubble and material for making artificial stone, but some squared blocks for sawing into slabs for interior decorative use have also been produced.

"In Quebec, clouded grey marbles and also a black marble are obtained in the quarries of Missisquoi Stone and Marble Co. Ltd., at Phillipsburg, near the foot of Lake Champlain. Brown marble for counters and wainscoting is obtained from the building-stone quarries in the Trenton limestone at St. Marc des Carrières, Portneuf county. Red and green marble for use as terrazzo is quarried by MAB Ltée at St. Joseph de Beauce. Orford Marble Co. Ltd., a new company, commenced preparations for quarrying a variegated red, green and grey serpentinous marble near North Stukely, Shefford county, late in 1945. White dolomite is quarried and crushed by Canadian Dolomite Company, Limited, at Portage du Fort, Pontiac county, for terrazzo chips, stucco dash, artificial stone, and various minor products.

"In Ontario, black marble beds up to 40 inches thick is produced by Silverton Black Marble Quarries Limited, Ottawa, at St. Albert, 30 miles southeast of Ottawa. Buff, red, white, green, and black marbles are quarried north of Madoc by Karl Stocklosar and by Connolly Marble, Mosaic and Tile Company Limited, for use as terrazzo. White Star Mine (Bolender Bros.) produces terrazzo and poultry grit at Marmora.

"In Manitoba, a number of highly coloured marbles are available along the Flin Flon and Hudson Bay railroads, and also at Fisher Branch and other places, but there is no activity at present.

"In British Columbia, there are many deposits of marble, but there is only a small production of white marble by Marble and Associated Products from a quarry near Victoria and by Beale Limestone Quarries on Texada Island."

SANDSTONE

Table 421.—Production of Sandstone in Canada, 1935-1945

Year	Short tons	\$	Year	Short tons	\$
1935.....	342,824	838,005	1941.....	169,885	305,528
1936.....	285,508	495,856	1942.....	153,865	236,810
1937.....	235,165	343,871	1943.....	164,163	250,603
1938.....	101,854	218,405	1944.....	146,766	223,453
1939.....	176,265	331,830	1945.....	291,430	466,397
1940.....	176,475	305,543			

Canadian sandstone has been utilized extensively in the construction of many important public buildings in Canada and is finding increasing favour as a material in the construction of the better type home. The rock occurs in Canada in a variety of colours, including white, reddish brown, yellow and grey. Shipments of sandstone were made in 1945 from quarries located in all of the provinces with the exception of Prince Edward Island, Manitoba, Saskatchewan and Alberta.

The greater part of the crude output in 1945 was employed as rubble and riprap and in the crushed state for concrete, highway construction and railroad ballasting. Sandstone in British Columbia, New Brunswick and Nova Scotia has been employed in the manufacture of abrasive

wheels and sharpening stones; such production is included with natural abrasives manufacture. Crude, crushed or ground quartzite sold for fluxing purposes or as silica sand is included under quartz as production.

SLATE

Table 422.—Production of Slate in Canada, 1935-1945

Year	Short tons	\$	Year	Short tons	\$
1935.....	1,129	4,329	1940.....	1,113	7,522
1936.....	1,247	5,414	1941.....	1,296	12,562
1937.....	900	5,519	1942.....	1,369	16,801
1938.....	979	6,311	1943.....	1,336	17,733
1939.....	1,149	6,760	1944.....	1,147	18,101
			1945.....	1,915	17,839

Canadian slate production in 1945 came entirely from the provinces of Quebec and British Columbia and represented shipments of the stone in the form of granules for roofing purposes, riprap and asphalt filling. No Canadian deposits of slate suitable for the production of high grade roofing slates or shingles have been reported as being under development in recent years.

WHITING SUBSTITUTE

(From the annual review by the Bureau of Mines, Ottawa)

Whiting substitute, also referred to as domestic whiting and as marble flour, is finely pulverized white limestone, or white marble or marl. It also may be made from lime or from waste calcium carbonate sludge resulting from the manufacture of caustic soda.

White marble and white limestone when used for whiting substitutes are pulverized to degrees of fineness ranging from 200 to 400 mesh. Only marble and limestone containing very little magnesium carbonate are used for making whiting substitute, and in Canada most of it is made from white marble, though two plants have been built in Ontario to make it from marl.

By-product precipitated chalk, made from waste sludge resulting from the manufacture of caustic soda from dead ash and lime, is classed as whiting substitute, but its usefulness is restricted by the fact that it almost invariably contains a small amount of free alkali. The raw materials for its manufacture are available, but it is not made in Canada.

Whiting substitute made in Canada is used mostly in the manufacture of oilcloth, linoleum, in certain kinds of rubber products, in putty, in explosives, and as a filler in newsprint, book and magazine paper. In lesser quantities it is used in the manufacture of moulded articles, cleaning compounds and polishes, as a ceramic glaze and for a number of other purposes.

Marl suitable for making whiting substitute should be white or nearly so, nearly free from grit and clayey material, and be very low in organic matter. This matter is present to some extent in all deposits of marl and renders the product unsuitable for use as a filler in products such as putty and paint where it will come in contact with oils. The oil-absorptive capacity of whiting substitute made from marl is usually greater than that of whiting, but otherwise the physical properties are much the same.

ROOFING GRANULES

(From the annual review by the Bureau of Mines, Ottawa)

During the past decade the roofing granule industry in Canada has increased over fourfold and the growth has been particularly rapid in the past three years. Canadian made granules are obtained from 7 deposits, 3 of which are in Ontario and 4 in British Columbia.

The granules consist of small broken particles of rock or slate in their natural state or artificially coloured, that are affixed to asphalt sheeting. The underside of the sheeting is coated with a film of talc or fine mica and is then cut into shapes for roofing shingles or for sidings (resembling rows of bricks separated by mortar). The exposed portion of the improved shingle

has an inner coating, usually of natural granules, upon which another coating of the required coloured granules is spread.

In Ontario three deposits are being quarried for granules in the vicinity of Madoc, 100 air miles east and north of Toronto. These are: a grey rhyolite deposit 5 miles northeast of Madoc; a black amphibole rhyolite 4 miles northwest of Madoc; and a greenish grey basalt 20 miles west of Madoc, near Havelock. Building Products Company, the leading Canadian manufacturer, crushes and screens the rock from these quarries at a mill near Madoc, and artificially colours the granules at a plant at Havelock, the only granule colouring plant in Canada.

In British Columbia, G. W. Richmond is quarrying a dark grey slate at McNab Creek, Howe Sound, and a greenish siliceous rock at Bridal Falls, near Chilliwack. At Kapoor on southern Vancouver Island, O. M. Brown is mining a grey black slate and, from an adjacent deposit, hard greenish rock. These two operators have crushing and screening plants in Vancouver and Victoria, respectively, where natural granules are produced and sold to roofing companies in the two cities.

Small quantities of granules that were made from slate deposits at Madoc proved to be too soft and their colour was too light a grey to be suitable for use. Red and green slates from the dumps of old slate quarries near Granby and Richmond in the Eastern Townships of Quebec have been used also to a small extent. Tests were made recently on the slate that occurs near Kentville, Nova Scotia.

Some of the leading manufacturers of granule roofings, as well as individuals, have been making tests and searching certain areas in Canada for rocks suitable for making the best type of granules, but the specifications are rigid. Apart from slates, there appear to be few such rocks in areas where they can be economically mined, crushed, and shipped to producing plants.

Processes for colouring granules are covered by many patents. A few of the methods employed consist of: heating, which darkens the colour; adding oxides of iron and chromium and then burning; addition of sodium silicate, clay and the required pigment; addition of zinc oxide, clay and liquid phosphoric acid, heating and then adding the pigment. Many combinations are employed and generally the formulae used by individual companies are closely guarded secrets.

Specifications for the types of rock that make the best granules are somewhat exacting and samples must pass severe tests. At one time they called for flat granules, and nearly all were made from slate. The present trend, however, is toward more solid angular fragments, and the use of true slate is decreasing, though in 1945, 36 per cent of the total used in Canada was slate granules (21 per cent natural and 15 per cent artificially coloured). Rocks suitable for granules should be fairly hard, of low porosity, fine grained, opaque, possess a high melting point, and break well. They should be composed mainly of silica or silicates and should be free of metallic minerals, flaky minerals, minerals with fibrous partings, and the carbonates. They should withstand weathering action over long periods, and prevent "blistering" of the underlying asphalt caused by combination of the penetration of water and actinic rays of the sun. Coloured rocks are generally preferred and the colours (reds and greens) are often intensified artificially, but the granules must have the physical properties that will enable them to maintain the colour permanently. Slates suitable for granules should be hard and their colour should be as dark (blue-black) as possible, or else greens and reds. All granules are oiled to improve adhesion to the asphalt and to intensify the colour, but for the latter the effect is not permanent. Two mesh grades of granules are used, namely "coarse" (10 to 28 mesh) and to a much smaller extent "fine" (28 to 35 mesh).

Prices vary considerably depending upon the type of granule, and upon whether the colour is natural or artificial. Imported granules range in price from \$16 to \$20 per ton, f.o.b. eastern Canadian plants, for natural rocks and slates; from \$20 to \$26 for artificially coloured reds and greens; from \$36 to \$40 for blues; and from \$22 to \$25 for buffs and browns.

2. SECONDARY PRODUCTION—THE STONE PRODUCTS INDUSTRY, 1945

In 1945 there were 144 stone dressing works whose operations were reported separately from the quarries. These plants were engaged chiefly in cutting or polishing Canadian or imported stone to produce finished monuments or cut and dressed stone for construction purposes. Retail producers engaged only in selling and lettering monuments have not been included. Eight establishments of rock wool were also included in this industry.

Output from this industry was valued at \$5,199,120 in 1945, an increase of 19.0 per cent over the total of \$4,370,430 reported for the previous year. The 62 works in Ontario accounted for 54.3 per cent of the total output and the 39 plants in Quebec for 24.9 per cent. The average number of employees was 1,055 and \$1,665,593 were paid in salaries and wages. Materials used in the cutting and dressing processes, including stone, cost \$1,706,599. The latter figure also includes the cost of materials used in the production of rock wool. Expenditures for fuel and electricity amounted to \$196,703.

Table 423.—Output of the Stone Products Industry, 1944 and 1945

Product	Total selling value at works	
	1944	1945
	\$	\$
Granite, cut and polished—		
(a) Monuments.....	1,871,157	2,183,799
(b) For building purposes.....	31,430	58,829
Marble, cut and polished—		
(a) Monuments.....	290,638	317,197
(b) For building purposes.....	80,803	132,498
Marble chips and dust.....	23,815	24,826
Limestone—		
(a) Monuments and bases.....	48,870	48,715
(b) For building purposes.....	98,866	290,618
Finished monuments, lettered only.....	228,169	219,483
Other products (*).....	1,638,763	1,858,102
Repairs and custom work (re-lettering, etc.).....	57,919	65,053
Total.....	4,370,430	5,199,120

(*) Includes rock wool, etc.

Table 424.—Production from the Stone Products Industry, by Provinces, 1944 and 1945

	Granite		Marble		Marble chips and dust	Limestone		Finished monuments, lettered only	Other products	Total
	Monu-ments	For build-ing purposes	Monu-ments	For build-ing purposes		Monu-ments and bases	For build-ing purposes			
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Prince Edward Isl- and and New Brunswick—										
1944.....	108,662		23,612	450				2,275	1,173	136,172
1945.....	115,497		20,121					2,265	168,788	306,671
Nova Scotia—										
1944.....	41,442	4,000	25,000					35,840	2,711	108,993
1945.....	46,402	6,000	29,241	3,460				41,325	795	127,223
Quebec—										
1944.....	557,591	15,471	7,506	26,668	4,679	3,007	650	15,241	389,958	1,020,771
1945.....	759,186	39,367	11,243	47,932	5,178	400	770	13,309	419,622	1,297,007
Ontario—										
1944.....	795,525	7,073	147,677	35,497	411	33,763	97,459	80,468	1,276,003	2,473,876
1945.....	928,194	6,500	166,747	54,184	1,500	29,725	289,543	70,294	1,277,106	2,823,793
Manitoba—										
1944.....	79,045		13,733	5,870	100	2,078		33,785	179	134,790
1945.....	61,218	2,122	12,095	14,064	8	2,340	225	29,881	868	122,821
Saskatchewan—										
1944.....	92,260	4,650	50,855	3,342	585	7,422	757	9,415	13,782	183,068
1945.....	79,185	4,500	41,438	5,300	590	13,830		5,595	38,822	189,260
Alberta—										
1944.....	96,737		21,810		18,040	2,600		41,988	6,926	188,101
1945.....	85,087		35,498		17,550	2,420		47,580	7,989	196,124
British Columbia—										
1944.....	99,895	236	445	8,976				9,157	5,950	124,659
1945.....	109,030	340	814	7,558			80	9,234	9,165	136,221
Canada—										
1944.....	1,871,157	31,430	290,638	80,803	23,815	48,870	98,866	228,169	1,696,682	4,370,430
1945.....	2,183,799	58,829	317,197	132,498	24,826	48,715	290,618	219,483	1,923,155	5,199,120

Table 425.—Total Production in Canada of Dressed Building Stone, 1928-1945

Year	Granite		Marble		Limestone		Sandstone from quarries	Total
	From quarries	From dressing works	From quarries	From dressing works	From quarries	From dressing works		
	\$	\$	\$	\$	\$	\$	\$	\$
1928.....	667,050	314,553	340,585	883,076	702,061	2,861,336	18,000	5,786,681
1929.....	746,537	465,185	347,256	1,621,112	944,491	2,739,504	92,500	6,956,585
1930.....	1,189,120	902,519	687,115	1,339,108	1,416,277	2,706,390	286,972	8,527,501
1931.....	1,011,499	1,032,202	576,458	1,054,952	1,085,767	1,372,131	686,616	6,519,615
1932.....	336,632	79,136	188,743	339,627	348,187	636,294	20,580	1,949,199
1933.....	114,318	40,224	27,377	73,445	111,235	281,074	19,300	666,973
1934.....	216,574	35,957	.....	137,902	173,536	280,279	5,500	849,748
1935.....	403,951	184,033	16,000	130,227	425,247	897,985	97,400	2,094,543
1936.....	171,858	330,306	104,738	175,834	189,064	514,373	167,859	1,654,034
1937.....	252,346	179,557	18,297	347,405	248,659	438,450	51,893	1,536,607
1938.....	244,501	216,485	1,440	369,698	227,324	832,123	83,692	1,975,262
1939.....	561,253	438,619	145,618	174,275	349,547	664,270	101,448	2,436,020
1940.....	255,527	159,427	19,680	218,271	192,183	446,441	55,139	1,346,668
1941.....	284,803	92,899	51,535	148,294	241,298	384,265	15,016	1,213,110
1942.....	108,807	121,450	19,476	139,109	169,882	102,388	8,600	669,212
1943.....	103,691	65,868	10,745	96,630	172,198	36,021	1,300	484,453
1944.....	83,485	31,430	18,135	80,803	214,037	98,866	34,750	561,506
1945.....	97,098	58,829	18,224	132,498	464,411	290,618	78,000	1,139,678

Table 426.—Total Production in Canada of Dressed Monumental and Ornamental Stone, 1927-1945

Year	Granite		Marble		Limestone		Sandstone from quarries	Total
	From quarries	From dressing works	From quarries	From dressing works	From quarries	From dressing works		
	\$	\$	\$	\$	\$	\$	\$	\$
1927.....	147,510	1,728,293	449,717	420,651	1,523	97,264	.....	2,844,958
1928.....	125,744	1,718,988	9,700	404,058	2,237	132,406	.....	2,393,133
1929.....	149,810	1,815,463	.....	391,947	4,722	325,876	.....	2,687,818
1930.....	111,604	1,815,143	.....	350,323	3,577	319,472	.....	2,690,019
1931.....	251,379	1,584,099	.....	257,668	6,300	43,584	.....	2,143,030
1932.....	196,071	1,164,283	.....	180,323	2,532	43,652	.....	1,586,561
1933.....	215,616	1,111,354	.....	200,313	2,868	30,370	.....	1,560,521
1934.....	244,286	1,271,009	24,342	168,201	3,488	27,036	.....	1,735,362
1935.....	277,668	1,208,414	.....	158,249	1,680	26,690	.....	1,732,601
1936.....	231,482	1,317,005	.....	150,629	.....	35,162	.....	1,734,278
1937.....	278,140	1,468,895 (*)	900	176,101	2,335	117,404	.....	2,043,775
1938.....	294,001	1,515,000	2,644	127,803	79,156	109,036	.....	2,127,640
1939.....	260,375	1,513,958	800	129,623	3,321	53,309	325	1,961,711
1940.....	223,203	1,416,298	.....	167,805	2,218	29,861	.....	1,839,385
1941.....	291,643	1,582,016	.....	186,269	2,339	31,820	400	2,094,487
1942.....	356,459	1,602,854	.....	197,189	4,513	23,435	.....	2,184,450
1943.....	392,828	1,601,756	.....	227,289	4,700	27,536	.....	2,254,109
1944.....	609,542	1,871,157	.....	290,638	4,575	48,870	918	2,825,700
1945.....	636,787	2,183,799	.....	317,197	5,700	48,715	.....	3,192,198

(*) Sandstone.

Table 427.—Production of Rock Wool in Canada, by Grades, 1945

	Quantity	Selling value at works
		\$
3-inch batts (*).....	.....sq. ft.	13,784,980
2-inch batts.....	.....sq. ft.	18,868,015
1-inch batts.....	.....sq. ft.	1,714,078
Granulated.....	.....cu. ft.	4,754,179
Bulk or loose wool.....	.....cu. ft.	603,782
Industrial wool (both loose and granulated).....	.....cu. ft.	453,115
Total.....	.....	1,839,122

(*) Includes four-inch batts.

Table 428.—Cost of Materials Used in the Stone Products Industry, 1944 and 1945

	Cost at works	
	1944	1945
	\$	\$
Stone—(a) From Canadian quarries.....	409,677	522,878
(b) Imported.....	218,367	264,784
Monuments, cut and polished, for lettering only.....	124,383	135,977
Silica sand or ground quartz.....	4,679	7,379
Slag and stone for rock wool.....	167,808	160,500
Coke for rock wool.....	136,253	114,382
All other materials.....	609,551	500,699
Total.....	1,670,718	1,706,599

CHAPTER TEN

CONTRACT DRILLING IN THE CANADIAN MINING INDUSTRY, 1945

Section 1

Diamond Drilling of Deposits Other than Fuels

There were 74 firms engaged in contract diamond drilling of Canadian mineral deposits, other than fuels, during 1945 compared with 34 in 1944. The income received from drilling operations completed by these firms in 1945 totalled \$8,650,864 against \$4,970,247 in the preceding year. The average number of employees in 1945 was estimated at 2,263 compared with 1,468 in 1944, and the amount of salaries and wages distributed during the year under review totalled \$3,906,545 as against \$2,461,813 in 1944.

The footage drilled in the Dominion by contractors during 1945 aggregated 5,262,438 feet, of which 32 per cent was completed in Ontario, 41 per cent in Quebec, 17 per cent in British Columbia and 6 per cent in the Northwest Territories. Contract drilling was also conducted in Nova Scotia, Manitoba, Saskatchewan, Alberta and Yukon. The footage drilled in 1945 was the greatest to be recorded since 1938 when complete statistics on diamond drilling were first compiled. The value of borts, ballas, carbons, castset bits, etc., purchased in 1945 by diamond drilling contractors totalled \$2,018,768 compared with \$810,085 in 1944.

Not included in this report are general statistics relating to diamond drilling conducted by Canadian mining companies with their own personnel and equipment; employment data relating to such operations are combined with those pertaining to the Canadian mining industry proper.

Table 429.—Contract Diamond Drilling Operations in Canada, 1938-1945 (Drilling operations conducted by contractors who employed diamond drills only and which were confined chiefly to the testing of metalliferous deposits.)

Year	Footage drilled	Income from drilling	Average number of employees	Total salaries and wages paid
		\$		\$
1938.....	2,296,773	3,956,564	1,627	1,801,988
1939.....	2,063,292	3,013,249	2,920	1,615,615
1940.....	2,422,948	3,021,629	1,350	1,575,786
1941.....	2,793,420	3,122,487	1,455	1,535,609
1942.....	2,960,364	3,147,532	1,019	1,597,040
1943.....	2,649,708	3,072,481	896	1,493,944
1944				
Nova Scotia.....	2,802	4,660	4	2,539
New Brunswick.....				
Quebec.....	1,310,156	1,985,927	634	969,082
Ontario.....	1,348,813	2,031,096	680	1,042,491
Manitoba.....	69,006	115,319	38	42,989
Saskatchewan.....	47,926	55,962	24	26,361
Alberta.....	32,922	128,329	25	54,498
British Columbia.....	544,077	392,961	102	220,746
Yukon.....				
Northwest Territories.....	113,095	255,993	61	103,107
Canada.....	3,468,797	4,970,247	1,468	2,461,813
1945				
Nova Scotia.....	6,432	9,695	1	2,192
New Brunswick.....				
Quebec.....	2,166,682	4,040,776	1,075	1,800,259
Ontario.....	1,676,076	2,817,502	788	1,331,532
Manitoba.....	120,799	196,312	48	81,542
Saskatchewan.....	53,142	80,727	22	38,099
Alberta.....	29,406	138,894	27	63,678
British Columbia.....	900,605	622,788	200	325,675
Yukon.....	3,046	6,521	7	6,139
Northwest Territories.....	306,250	737,649	95	257,429
Canada.....	5,262,438	8,650,864	2,263	3,906,545

Table 430.—Value of Stones, Readyset and Castset Bits Purchased by Contractors, 1938-1945

Year	Value	Year	Value
	\$		\$
1938.....	649,374	1942.....	634,233
1939.....	607,806	1943.....	637,070
1940.....	881,085	1944.....	810,085
1941.....	861,253	1945.....	2,018,768

Equipment owned by diamond drilling contractors in 1945 included 299 air or steam-operated drills, 430 gas-driven drills and 3 electric drills.

Table 431.—Drilling Completed on Auriferous Quartz Deposits (Gold Mines) in Canada, 1944 and 1945

	Footage drilled	
	1944	1945
Diamond drilling for exploration and testing—		
By mining companies with their own personnel and equipment.....	510,262	591,243
By diamond drilling contractors (*).....	1,606,205	4,011,223
Other diamond drilling—		
Blast hole diamond drilling:		
By mining companies with their own personnel and equipment.....	83,672	134,555
By diamond drilling contractors (*).....	444,859	420,519
Drilling by percussion or other machines (†).....	17,830,270	14,649,301

(*) Included in Table 429.

(†) Not complete as records are unavailable at certain mines.

Value of diamonds purchased by gold mining companies in 1945 totalled \$157,144 compared with \$128,115 in 1944.

Table 432.—Drilling Completed in Copper-Gold-Silver and Nickel-Copper Deposits in Canada, 1944 and 1945

	Footage drilled	
	1944	1945
Diamond drilling for exploration and testing—		
By mining companies with their own personnel and equipment.....	99,691	76,089
By diamond drilling contractors (*).....	285,386	475,066
Other diamond drilling—		
Blast hole diamond drilling:		
By mining companies with their own personnel and equipment.....	1,088,602	907,598
By diamond drilling contractors (*).....	139,552	310,446
Drilling by percussion or other machines (†).....	12,731,871	11,869,213

(*) Included in Table 429.

(†) Not complete as records are unavailable at certain mines.

Value of diamonds purchased by copper-gold-silver and nickel-copper mining companies in 1945 totalled \$176,034 compared with \$180,388 in 1944.

Table 433.—Drilling Completed on Silver-Lead-Zinc and Silver-Cobalt Deposits in Canada, 1944 and 1945

	Footage drilled	
	1944	1945
Diamond drilling for exploration and testing—		
By mining companies with their own personnel and equipment.....	7,353	11,786
By diamond drilling contractors (*).....	86,466	55,429
Other diamond drilling—		
Blast hole diamond drilling:		
By mining companies with their own personnel and equipment.....		
By diamond drilling contractors (*).....	280,447	272,508
Drilling by percussion or other machines (†).....	2,660,574	1,538,711

(*) Included in Table 429.

(†) Not complete as records are unavailable at certain mines.

Table 434.—Drilling Completed on Other Metal-Bearing Deposits, 1944 and 1945

	Footage drilled (b)	
	1944	1945
Diamond drilling for exploration and testing—		
By mining companies with their own personnel and equipment.....	30,864	
By diamond drilling contractors (*).....	41,976	3,725
Other diamond drilling—		
Blast hole diamond drilling:		
By mining companies with their own personnel and equipment.....	(a)	(a)
By diamond drilling contractors (*).....	(a)	(a)
Drilling by percussion or other machines.....	(a) 356,697	800

(*) Included in Table 429.

(a) Not reported, or not complete as records are unavailable at certain mines.

(b) Includes drilling on iron, chromite, molybdenite and mercury deposits; exclusive of drilling on pitchblende deposits.

Table 435.—Drilling Completed on Asbestos Deposits, 1944 and 1945

	Footage drilled	
	1944	1945
Diamond drilling for exploration and testing—		
By mining companies with their own personnel and equipment.....	37,111	9,275
By diamond drilling contractors (*).....	22,019	28,703
Other diamond drilling—		
Blast hole diamond drilling:		
By mining companies with their own personnel and equipment.....		9,227
By diamond drilling contractors.....		
Drilling by percussion or other machines.....	(†) 3,414,969	3,197,308

(*) Included in Table 429.

(†) Not complete as data are not reported by some firms.

Diamonds purchased by asbestos mining companies in 1945 cost \$8,424 compared with \$5,756 in 1944.

NOTE.—The total footage of contract drilling recorded in Tables 431 to 435 does not necessarily agree with the corresponding totals shown in Table 429, as drilling data are incomplete or unobtainable from some mining firms.

BLAST HOLE DRILLING

Mr. R. L. Loofbourow, in "Mining and Metallurgy", summarizes the progress and the recent advances in the utilization of diamond drills for drilling blast-holes as follows: "(1) Working conditions, safety and ventilation are notably improved. (2) In comparison with some other bulk methods, less stope preparation is required. (3) Cleaner mining, in comparison with some other bulk methods, results. The location of stope walls may be predetermined definitely and they may be cut clean and smooth. (4) Diamond drilling may readily be used in some pillar removal which would be difficult or impossible by other means. (5) An excellent distribution of explosives is accomplished; the cost of explosives has almost always been reduced sharply. (6) Extremely hard materials can be drilled with greater speed and economy. (7) The whole program of development and mining is usually accelerated. (8) Production may be held steady in spite of a fluctuating labour supply. (9) No large amount of broken ore is tied up as it is with some other methods. This may be of great importance in preventing oxidation of sulphides which would cause heating as well as difficulties in flotation."

Section II

Contract Drilling for Fuels

In 1945, 65 contractors reported drilling for petroleum, natural gas or for other purposes. The footage drilled totalled 733,721 and the income from operations amounted to \$4,095,211 compared, respectively, with 583,155 feet and \$5,353,845 in 1944; of the footage drilled in 1945, there were 224,503 feet completed by cable drills and 509,218 feet by rotary drills. Employees engaged on this work in 1945 totalled 689, and salaries and wages paid amounted to \$1,224,813. Drilling completed by oil companies with their own equipment are not included in this report.

Table 436.—Drilling Conducted During 1944 and 1945 by Contractors for Petroleum, Natural Gas, and for Other Purposes Not Included in Section I of This Report

Province	Footage drilled			Footage drilled			Footage drilled			Gross income from drilling	Average number of employees	Total salaries and wages paid
	For petroleum			For gas			For other purposes					
	Type of drill			Type of drill			Type of drill					
	Cable	Diamond	Rotary	Cable	Diamond	Rotary	Cable	Diamond	Rotary			
		(feet)			(feet)			(feet)			No.	\$
1944												
Prince Edward Island												
Nova Scotia	3,393									86,922	22	28,273
New Brunswick									9,136			
Quebec (a)												
Ontario	4,289											
Manitoba (a)									21,849	397,395	98	123,906
Saskatchewan	205		10,100			12,306			3,000	125,381	92	22,288
Alberta	4,523	2,000	305,901		1,000	21,329				4,744,147	336	912,101
British Columbia												
Northwest Territories												
Canada	12,410	2,000	316,001	184,124	1,000	33,635	33,985			5,353,845	533	1,086,878
1945												
Prince Edward Island												
Nova Scotia												
New Brunswick												
Quebec	2,119											
Ontario	7,597								7,607	35,420	10	15,507
Manitoba												
Saskatchewan	219		73,189	166,851			22,194			69,588	20	13,681
Alberta	4,550		397,723	1,886						432,392	102	119,335
British Columbia										16,907	3	4,043
Northwest Territories										651,683	96	220,828
Yukon										2,889,221	458	851,419
Canada	14,485		470,912	171,519		37,778	38,499			4,095,211	689	1,224,813

(a) Included with Nova Scotia.
(b) Subject to revision.

DIRECTORY OF FIRMS 1945

In the following pages the names and addresses of all the principal operators in the Canadian mining industry are given; also the location of the properties worked in 1945.

METAL MINING INDUSTRIES

The Alluvial Gold Mining Industry

Name	Head or executive office address	Location
BRITISH COLUMBIA—		
Anderson, Marius A.	Wells.....	Eight Mile Lake
Bride, Maurice.....	Atlin.....	Spruce Creek
Brister, J. V.....	Atlin.....	Spruce Creek
Columbia Development Ltd.....	Atlin.....	Atlin
Coulter Creek Hydraulics.....	Wells.....	Barkerville
Doody, James.....	Barkerville.....	Cariboo
Edwardson, Mark.....	Atlin.....	Spruce Creek
Ennerdale Placers.....	Van Winkle.....	Cariboo
Fisher, N. S.....	Atlin.....	Boulder Creek
Fry, Thomas.....	Quesnel.....	Cariboo
Grisson and Huffman.....	Atlin.....	Pine Creek
Gaensbauer and Piccolo.....	Atlin.....	McKee Creek
Gunn, J. J.....	Wells.....	Cariboo
Haylnore, W.....	Goldbridge.....	Lillooet
Holm and Petersen.....	Barkerville.....	Antler Creek
Ivanic, Steve & Co.....	Atlin.....	Spruce Creek
Johnson, Konrad.....	Atlin.....	Wright Creek
Ketch Placers.....	Wells.....	Cariboo
Lowhee Mining Co. Ltd.....	605 Tacoma Bldg., Tacoma Wash.....	Barkerville
MacKinnon, Chas. E.....	Atlin.....	Spruce Creek
Miller, James W.....	Marysville.....	Sawmill Creek
Murphy, Nathan.....	Atlin.....	Atlin
Noland, John W.....	Atlin.....	Spruce Creek
Piccolo, Luigi.....	Atlin.....	Pine Creek
Prpich, Tom.....	Atlin.....	O'Donnel
Rask, Eric.....	Wells.....	Cariboo
Reed, R. MacD.....	Barkerville.....	Cariboo
Risberg, Carl A.....	Van Winkle.....	Cariboo
Savery, Walter H.....	Wells.....	Mink Gulch
Swanson & Watt.....	Atlin.....	McKee Creek
Tabert, Issac.....	Willow River.....	Cariboo
Wickstrom & Partners.....	Atlin.....	Ruby Creek
Wright Creek Hydraulic Co.....	Atlin.....	Wright Creek
YUKON—		
Clear Creek Placers Ltd.....	Dawson.....	Clear Creek
Lunde, V.....	Mayo.....	Various
Numaloke Mines Ltd.....	25 King St. West, Toronto, Ont.....	Various
Yukon Alluvial Golds Ltd.....	Dawson.....	Thistle Creek
Yukon Consolidated Gold Corp. Ltd.....	1919 Marine Bldg., Vancouver, B.C.....	Various

Active Operators in the Auriferous Quartz Mining Industry

NOVA SCOTIA—		
Aulenback Mines.....	Box 127, Bridgewater, N.S.....	Lunenburg
Consolidated Mining & Smelting Co. of Canada Ltd.....	215 St. James St. W., Montreal, Que.....	Caribou Mines
Queens Mines Ltd.....	297 Agricola St., Halifax, N.S.....	Malaga
Corwin Gold Mines Ltd.....	155 Riverside Drive, New York, N.Y.....	Oldham
QUEBEC—		
Abenakis Mines Ltd.....	Room 305, 350 Bay St., Toronto, Ont.....	Beauchastel Tp.
Adanac Quebec Mines Ltd.....	Room 403, 100 Adelaide St. W., Toronto, Ont.....	Rouyn Tp.
Adelmont Gold Mines Ltd.....	Suite 101, 184 Bay St., Toronto, Ont.....	Louvicourt
Alger Gold Mines Ltd.....	Room 403, 357 Bay St., Toronto, Ont.....	Cadillac
Alta Mines Ltd.....	Chambre 903, 132 Ouest rue St. Jacques, Montreal, Que.....	Titlenmont
Anglo-Rouyn Mines Ltd.....	Room 706, 100 Adelaide St. W., Toronto, Ont.....	Rouyn Tp.
Ansley Gold Mines Ltd.....	Suite 1008, 330 Bay St., Toronto, Ont.....	Pershing Tp.
Arken Gold Mines Ltd.....	Room 2, 26-28 Adelaide St. West, Toronto, Ont.....	Louvicourt Tp.
Arntfield Mining Corp. Ltd.....	Arntfield.....	Beauchastel Tp.
Astoria Quebec Mines Ltd.....	70 St. Paul St., Quebec, Que.....	Rouyn Tp.
Aubelle Mines Ltd.....	Room 310, 100 Adelaide St. West, Toronto, Ont.....	Guillet Tp.
Audley Gold Mines Ltd.....	36 Toronto St., Toronto, Ont.....	Blondeau Tp.

DIRECTORY OF FIRMS—Continued

Active Operators in the Auriferous Quartz Mining Industry—Continued

Name	Head or executive office address	Location
QUEBEC—Continued		
Aumaque Gold Mines Ltd.	Room 310, 100 Adelaide St. West, Toronto, Ont.	Bourlamaque Tp.
Beattie Gold Mines Ltd.	25 King St. West, Toronto, Ont.	Duparquet
Bell River Mines Ltd.	Room 1701, 372 Bay St., Toronto, Ont.	Louvicoourt Tp.
Belleterre Quebec Mines Ltd.	Belleterre, Que.	Belleterre
Beycourt Gold Mines Ltd.	Room 34, 275 St. James St. West, Montreal, Que.	Louvicoourt Tp.
Blondor Quebec Mines Ltd.	Suite 1008, 330 Bay St., Toronto, Ont.	Guillet Tp.
Bonville Gold Mines Ltd.	Room 310, 100 Adelaide St. West, Toronto, Ont.	Villebon Tp.
Border Malartic Gold Mines Ltd.	Room 501, 67 Yonge St., Toronto, Ont.	Cadillac Tp.
Bordulac Mines Ltd.	Room 404, Temple Bldg., Toronto, Ont.	Labyrinth Lake
Bourbon Mines Ltd.	226 Bay St., Toronto, Ont.	Dufresnay Tp.
Bourlamaque Central Mines Ltd.	Suite 1008, 330 Bay St., Toronto, Ont.	Bourlamaque Tp.
Boycon Pershing Gold Mines Ltd.	Room 209, 330 Bay St., Toronto, Ont.	Vauquelin Tp.
Brenmore Quebec Mines Ltd.	355 St. James St. West, Montreal, Que.	Guillet Tp.
Canadian Malartic Gold Mines Ltd.	Room 2810, 25 King St. West, Toronto, Ont.	Malartic
Candego Mines Ltd.	414 St. James St. West, Montreal, Que.	Gaspe
Carlson Mines Ltd.	Box 22, Rouyn, Que.	Dufay Tp.
Central Cadillac Mines Ltd.	717 Transportation Bldg., Montreal, Que.	Cadillac
Central Duparquet Mines Ltd.	Duparquet, Que.	Duparquet Tp.
Centremaque Gold Mines Ltd.	Room 605, 407 McGill St., Montreal, Que.	Bourlamaque Tp.
Chimo Gold Mines Ltd.	25 King St. West, Toronto, Ont.	Vauquelin Tp.
Citralam Malartic Mines Ltd.	226 Bay St., Toronto, Ont.	Malartic Tp.
Clarendon Gold Mines Ltd.	11 King St. West, Toronto, Ont.	Joannes Tp.
Clarnor Malartic Mines Ltd.	226 Bay St., Toronto, Ont.	Dubuisson Tp.
Clarry Gold Mines Ltd.	Grimsby, Ont.	Duparquet Tp.
Clinger Gold Mines Ltd.	Room 714, 320 Bay St., Toronto, Ont.	Vauquelin Tp.
Cluny Gold Mines Ltd.	Room 504, 357 Bay St., Toronto, Ont.	Guillet Tp.
Colcourt Mines Ltd.	Room 34, 275 St. James St. W., Montreal, Que.	Louvicoourt Tp.
Comet Duvernay Gold Mines Ltd.	Box 189, Station "E", Montreal, Que.	Duvernay Tp.
Commando Gold Mines Ltd.	Box 69, Noranda, Que.	Privat Tp.
Cooper Lake Gold Mines Ltd.	Suite 1008, 330 Bay St., Toronto, Ont.	Villebon Tp.
Courageous Gold Mines Ltd.	226 Bay St., Toronto, Ont.	Louvicoourt Tp.
Cournor Mining Co. Ltd.	360 St. James St., Montreal, Que.	Perron
Courtmont Gold Mines Ltd.	36 Toronto St., Toronto, Ont.	Louvicoourt Tp.
Croinor Pershing Mines Ltd.	Senneterre.	Pershing Tp.
Croydon Rouyn Mines Ltd.	Room 501, 67 Yonge St., Toronto, Ont.	Dufresnoy Tp.
Cyprus Mines Ltd.	100 Adelaide St., Toronto, Ont.	Dufresnoy Tp.
D'Aragon Mines Ltd.	Room 1323, 67 Yonge St., Toronto, Ont.	Bourlamaque Tp.
Dastur Gold Mines Ltd.	Room 204, 80 Richmond St. W., Toronto, Ont.	Dasserat Tp.
Destor Valley Gold Mines Ltd.	Room 1700, 360 St. James St. W., Montreal, Que.	Destor Tp.
Destorbelle Mines Ltd.	Room 1010, 100 Adelaide St. W., Toronto, Ont.	Aigebelle Tp.
Diaterra Gold Mines Ltd.	Room 501, 67 Yonge St., Toronto, Ont.	Guillet Tp.
Donalds Mines Ltd.	Room 206, 625 Burnside St., Montreal, Que.	Rouyn Tp.
Don-X Mines Ltd.	100 Adelaide St., Toronto, Ont.	Dufresnoy Tp.
Dome Exploration Co. (Quebec) Ltd.	Bourlamaque.	Louvicoourt Tp.
Donrand Mines Ltd.	100 Adelaide St., Toronto, Ont.	Rouyn Tp.
Dubuisson Mines Ltd.	516 Canada Cement Bldg., Montreal, Que.	Senneterre
Dukel Gold Mines Ltd.	67 Elm St., Sudbury, Ont.	Duparquet Tp.
Dulama Gold Mines Ltd.	Room 209, 330 Bay St., Toronto, Ont.	Bourlamaque Tp.
Dunford Rouyn Mines Ltd.	Room 714, 320 Bay St., Toronto, Ont.	Rouyn
Duquesne Mining Co. Ltd.	112 Yonge St., Toronto, Ont.	Destor Tp.
Duvay Gold Mines.	Room 501, 67 Yonge St., Toronto, Ont.	Duvernay Tp.
Eastchester Mines Ltd.	68 Yonge St., Toronto, Ont.	Duparquet Tp.
East Malartic Mines Ltd.	355 St. James St. W., Montreal, Que.	Norrie
Edwaska Gold Mines Ltd.	100 Adelaide St., Toronto, Ont.	Louvicoourt Tp.
Elder Gold Mines Ltd.	Room 602, 11 King St. W., Toronto, Ont.	Beauchastel Tp.
Elderidge Gold Mines Ltd.	11 King St. W., Toronto, Ont.	Beauchastel Tp.
Eldona Gold Mines Ltd.	62 Richmond St. W., Toronto, Ont.	Rouyn
Elmac Malartic Mines Ltd.	Room 403, 357 Bay St., Toronto, Ont.	Dubuisson Tp.
Fontana Mines (1945) Ltd.	437 St. James St. W., Montreal, Que.	Duvernay Tp.
Formaque Gold Mines Ltd.	610 St. James St., Montreal, Que.	Bourlamaque Tp.
Francoeur Gold Mines Ltd.	941 Dominion Square Bldg., Montreal, Que.	Armfield
Golar Mines Ltd.	200 Bay St., Toronto, Ont.	Dufresnoy Tp.
Golden Valley Mines Ltd.	Suite 1209, 330 Bay St., Toronto, Ont.	Dasserat
Goldfinch Mines Ltd.	Room 1700, 360 St. James St. W., Montreal, Que.	Joannes Tp.
Goldora Mines Ltd.	717 Transportation Bldg., Montreal, Que.	Bourlamaque Tp.
Goldvue Mines Ltd.	Suite 1024, 85 Richmond St. W., Toronto, Ont.	Duvernay Tp.
Governor Gold Mines Ltd.	Suite 216, 331 Bay St., Toronto, Ont.	Beauchastel Tp.
Grande Terre Gold Mines Ltd.	Room 2, 26-28 Adelaide St. W., Toronto, Ont.	Guillet Tp.
Guillet Gold Mines Ltd.	Rouyn, Que.	Blondeau Tp.
Gwillim Lake Gold Mines Ltd.	Suite 1207, 67 Yonge St., Toronto, Ont.	Chibougamau
Habitant Gold Mines Ltd.	710 Excelsior Life Bldg., Toronto, Ont.	Beauchastel Tp.
Harricana Gold Mines Inc. (1939)	Room 209, 330 Bay St., Toronto, Ont.	Dubuisson
Heva Cadillac Gold Mines Ltd.	Room 17, 24 King St. W., Toronto, Ont.	Joannes Tp.
Hosco Gold Mines Ltd.	357 Bay St., Toronto, Ont.	Joannes Tp.
Hugh Malartic Mines Ltd.	226 Bay St., Toronto, Ont.	Malartic Tp.

DIRECTORY OF FIRMS—Continued

Active Operators in the Auriferous Quartz Mining Industry—Continued

Name	Head or executive office address	Location
QUEBEC—Concluded		
Inesco Mines Ltd.	355 St. James St. W., Montreal, Que.	Dufresnoy Tp.
Jocor Mines Ltd.	275 St. James St. W., Montreal, Que.	Louvicoourt Tp.
Kayrand Mining & Development Co. Ltd.	Room 301, 215 St. James St. W., Montreal, Que.	Dalquier
Kenda Pershing Mines Ltd.	184 Bay St., Toronto, Ont.	Pershing Tp.
Kencour Gold Mines Ltd.	36 Toronto St., Toronto, Ont.	Louvicoourt Tp.
Kenroy Malartic Mines Ltd.	Room 1701, 372 Bay St., Toronto, Ont.	Malartic Tp.
Kiska Gold Mines	Suite 407, 26 Queen St., Toronto, Ont.	Duverny Tp.
Lake Expanse Gold Mines Ltd.	67 Yonge St., Toronto, Ont.	Belleterre
Lamaque Mining Co. Ltd.	Bourlamaque, Que.	Bourlamaque
Lapalartic Mines Ltd.	100 Adelaide St. W., Toronto, Ont.	Malartic Tp.
Lebon Gold Mines Ltd.	100 Adelaide St. W., Toronto, Ont.	Louvicoourt Tp.
Louvicoourt Goldfield Corp.	Room 501, 67 Yonge St., Toronto, Ont.	Villebon Tp.
Macdor Quebec Mines Ltd.	1604 Edifice Aldred, Montreal, Que.	Perron
MacClare Mines Ltd.	330 Bay St., Toronto, Ont.	Bourlamaque Tp.
Macbarr Mines Ltd.	226 Bay St., Toronto, Ont.	Dufresnoy Tp.
Malartic Gold Fields Ltd.	1102 Central Bldg., Toronto, Ont.	Bourlamaque Tp.
Malartic River Mines Ltd.	355 St. James St. W., Montreal, Que.	Dubuisson Tp.
Malbec Gold Mines Ltd.	Val d'Or, Que.	Malartic
Manterre Gold Mines Ltd.	45 Richmond St. W., Toronto, Ont.	Dalquier Tp.
Marbenor Malartic Mines Ltd.	100 Adelaide St. W., Toronto, Ont.	Guillet Tp.
Marion Rouyn Gold Mines Ltd.	36 Toronto St., Toronto, Ont.	Fournier Tp.
McWatters Gold Mines Ltd.	24 King St. W., Toronto, Ont.	Rouyn
Mic-Mac Mines Ltd.	Drawer 988, Haileybury, Ont.	Rouyn
Millerlaun Rouyn Gold Mines Ltd.	c/o Royal Trust Co., Montreal, Que.	Bousquet Tp.
Molijevs Gold Mines Ltd.	465 Bay St., Toronto, Ont.	Launay Tp.
Montmagy Gold Mines Ltd.	67 Yonge St., Toronto, Ont.	Disson Tp.
Mountain Crest Mines Ltd.	c/o J. W. MacKenzie, Arntfield, Que.	Beauchastel Tp.
Murbell Gold Mines Ltd.	1201 ouest, rue Sherbrooke, Montreal, Que.	Lacoste
Mylamaque Mines Ltd.	80 Richmond St. W., Toronto, Ont.	Bourlamaque Tp.
O'Brien Gold Mines Ltd.	200 Bay St., Toronto, Ont.	Cadillac Tp.
New Bidlamaque Gold Mines Ltd.	Kewagama	Bourlamaque Tp.
Norbenite Malartic Mines Ltd.	Room 714, 320 Bay St., Toronto, Ont.	Malartic
Norcourt Gold Mines Ltd.	Room 1008, 330 Bay St., Toronto, Ont.	Louvicoourt Tp.
North Belleterre Gold Mines Ltd.	275 St. James St., Montreal, Que.	Devlin Tp.
North Malartic Gold Mines Ltd.	39 Notre Dame St. E., Montreal, Que.	Malartic Tp.
Nortyne Gold Mines Ltd.	Noranda, Que.	Vassan Tp.
Normar Gold Mines Ltd.	226 Bay St., Toronto, Ont.	Bousquet
Norman Malartic Mines Ltd.	24 King St. W., Toronto, Ont.	Dubuisson Tp.
Orenada Gold Mines Ltd.	226 Bay St., Toronto, Ont.	Bourlamaque
Ortona Gold Mines Ltd.	330 Bay St., Toronto, Ont.	Guillet Tp.
Pandora Ltd.	67 Yonge St., Toronto, Ont.	Cadillac
Paramaque Mines Ltd.	Cadillac	Bourlamaque
Pen-Rey Gold Mines Ltd.	36 Toronto St., Toronto, Ont.	Rouyn Tp.
Pershing Manitou Gold Mines Ltd.	330 Bay St., Toronto, Ont.	Belcourt
Perron Gold Mines Ltd.	132 rue St. Jacques ouest, Montreal, Que.	Perron
Petitclerc Mines Ltd.	Perron	Louvicoourt T
P Phelps Gold Mines Ltd.	200 Bay St., Toronto, Ont.	Duprat Tp.
Pinnacle Gold Mines Ltd.	67 Yonge St., Toronto, Ont.	Privat Tp.
Pitt Gold Mining Co. Ltd.	80 Richmond St. W., Toronto, Ont.	Destor Tp.
Powell Rouyn Gold Mines Ltd.	80 King St. W., Toronto, Ont.	Noranda
Rand Malartic Mines Ltd.	Noranda	Fournier Tp.
Rambull Gold Mines Ltd.	56 Sparks St., Ottawa, Ont.	Figury Tp.
Randona Quebec Gold Mines Ltd.	226 Bay St., Toronto, Ont.	Dufresnoy Tp.
Raymond Tiblément Gold Mines Ltd.	330 Bay St., Toronto, Ont.	Vauquelin Tp.
Record Rouyn Mines Ltd.	200 Bay St., Toronto, Ont.	Beauchastel Tp.
Regcourt Gold Mines Ltd.	67 Yonge St., Toronto, Ont.	Louvicoourt Tp.
Renfort Gold Mines Ltd.	275 St. James St. W., Montreal, Que.	Dasserrat Tp.
Rocdor Mines Ltd.	100 Adelaide St. W., Toronto, Ont.	Dubuisson Tp.
Rochette Gold Mines Co. Ltd.	199 Bay St., Toronto, Ont.	Launay Tp.
Roulette Gold Mines Ltd.	540 rue Boucher, Montreal, Que.	Privat
Rouyn Merger Gold Mines Ltd.	80 Richmond St., Toronto, Ont.	Rouyn
Sand Lake Gold Mines Ltd.	2-8 King St. E., Toronto, Ont.	Guillet Tp.
Sanita Gold Mines Ltd.	357 Bay St., Toronto, Ont.	Vauquelin Tp.
Scott Chibaugamau Mines Ltd.	67 Yonge St., Toronto, Ont.	Louvicoourt Tp.
Senator Rouyn Ltd.	215 St. James St. W., Montreal, Que.	Noranda
Shawkey (1945) Mines Ltd.	454 Main St., Hull, Que.	Dubuisson Tp.
Sigma Mines (Quebec) Ltd.	80 King St. W., Toronto, Ont.	Bourlamaque
Simon Lake Mines Ltd.	Bourlamaque, Que.	Vauquelin Tp.
Sisocoe Gold Mines Ltd.	85 Richmond St. W., Toronto, Ont.	Sisocoe
Standard Gold Mines Ltd.	907 Dominion Square Bldg., Montreal, Que.	Perron
Sladen-Malartic Mines Ltd.	1604 Aldred Bldg., Montreal, Que.	Malartic
Stadacona Mines (1944) Ltd.	56 Sparks St., Ottawa, Ont.	Rouyn
Starlight Mines Ltd.	Rouyn	Louvicoourt Tp.
Sullivan Consolidated Mines Ltd.	100 Adelaide St. W., Toronto, Ont.	Dubuisson Tp.
Thurbois Mines Ltd.	1604 Aldred Bldg., Montreal, Que.	Destor Tp.
Tiblément Goldfields Ltd.	1550 Elsmere Ave., Windsor, Ont.	Tiblément Tp.
Trojan Gold Mines Ltd.	603 Royal Bank Bldg., Toronto, Ont.	Privat Tp.
Tromac Mines Ltd.	33 Melinda St., Toronto, Ont.	Dufresnoy Tp.
Vimay Malartic Mines Ltd.	100 Adelaide St., Toronto, Ont.	Malartic Tp.
Wasa Lake Gold Mines Ltd.	226 Bay St., Toronto, Ont.	Beauchastel Tp.
West Malartic Mines Ltd.	1006 Concourse Bldg., Toronto, Ont.	Cadillac
Wiltsey-Coghlan Mines (Quebec) Ltd.	7000 Jeanne Mance St., Montreal, Que.	Rouyn

DIRECTORY OF FIRMS—Continued

Active Operators in the Auriferous Quartz Mining Industry—Continued

Name	Head or executive office address	Location
ONTARIO—		
<i>Porcupine Area—</i>		
Aljo Mines Ltd.....	Room 204, 80 Richmond St. W., Toronto, Ont.	Beatty Tp.
Amalgamated Gold Fields Corp. Ltd.....	Room 208, 331 Bay St., Toronto, Ont.	Matheson
Andman Porcupine Gold Mines Ltd.....	Schumacher, Ont.	Schumacher
Anson-Cartwright Mines Ltd.....	Room 209, 330 Bay St., Toronto, Ont.	Matheson
Aquarius Porcupine Gold Mines Ltd.....	Room 706, 100 Adelaide St. W., Toronto, Ont.	Macklem Tp.
Aumo Porcupine Mines Ltd.....	1305 Concourse Bldg., 100 Adelaide St. W., Toronto, Ont.	Timmins
Aunor Gold Mines Ltd.....	1600 Royal Bank Bldg., Toronto, Ont.	Timmins
Banner Porcupine Mines Ltd.....	Room 1705, 372 Bay St., Toronto, Ont.	Porcupine
Bonetel Gold Mines Ltd.....	Room 1705, 372 Bay St., Toronto, Ont.	Pamour
Boxada Mines Ltd.....	Room 1409, 330 Bay St., Toronto, Ont.	Beatty Tp.
Braulan Porcupine Mines Ltd.....	Room 1705, 372 Bay St., Toronto, Ont.	Pamour
Buffalo Ankerite Gold Mines Ltd.....	P.O. Box 533, South Porcupine, Ont.	Deloro Tp.
Burma Dip Gold Mines Ltd.....	Room 302, Royal York Hotel, Toronto, Ont.	Night Hawk Lake
Carshaw Porcupine Gold Mines Ltd.....	Suite 6, 121 Wyandotte St. W., Windsor, Ont.	Shaw Tp.
Carscor Porcupine Gold Mines Ltd.....	36 Toronto St., Toronto, Ont.	Bristol Tp.
Chennault Gold Mines Ltd.....	Suite 312, 9 Richmond St. E., Toronto, Ont.	McArthur Tp.
Clavos Porcupine Mines Ltd.....	Suite 1024, 85 Richmond St. W., Toronto, Ont.	German Tp.
Clodan Gold Mines Ltd.....	119 Williamson Rd., Toronto, Ont.	Matheson
Coniarum Mines Ltd.....	25 King St. W., Toronto, Ont.	Schumacher
Cunigold Mines Ltd.....	Room 302, 57 Queen St. W., Toronto, Ont.	Mann Tp.
Dale Gold Mines Ltd.....	Suite 504, 357 Bay St., Toronto, Ont.	Harker Tp.
Davidson Tisdale Mines Ltd.....	Suite 2810, 25 King St. W., Toronto, Ont.	Tisdale Tp.
Delcore Porcupine Mines Ltd.....	Room 706, 100 Adelaide St. W., Toronto, Ont.	Deloro Tp.
Delnite Mines Ltd.....	P.O. Box 590, Timmins, Ont.	Deloro Tp.
Denallen Gold Mines Ltd.....	36 Toronto St., Toronto, Ont.	Denton Tp.
Dome Mines Ltd.....	36 Toronto St., Toronto, Ont.	Tisdale Tp.
Edgewater Porcupine Gold Mines Ltd.....	814 Metropolitan Bldg., Toronto, Ont.	Night Hawk Lake
Golden Arrow Mines Ltd.....	Room 428, 67 Yonge St., Toronto, Ont.	Ramore
Goldhawk Porcupine Mines Ltd.....	Suite 1107, 67 Yonge St., Toronto, Ont.	Cody Tp.
Hallnor Mines Ltd.....	Pamour	Whitney Tp.
Hollinger Consolidated Gold Mines Ltd.....	Timmins	Timmins
Hoyle Mining Company Ltd.....	P.O. Box 997, Haileybury, Ont.	Pamour
Jasper Porcupine Mines Ltd.....	43 Colborne St., Toronto, Ont.	Deloro Tp.
Jowsey Denton Gold Mines Ltd.....	Room 1701, 372 Bay St., Toronto, Ont.	Carscallen Tp.
Kimball Porcupine Gold Mines Ltd.....	70 Albert St., Toronto, Ont.	Macklem Tp.
McIntyre Porcupine Mines Ltd.....	Schumacher, Ont.	Schumacher
Pamour Porcupine Mines Ltd.....	Pamour, Ont.	Whitney Tp.
Paymaster Consolidated Mines Ltd.....	Box 508, South Porcupine, Ont.	South Porcupine
Preston-East Dome Mines Ltd.....	South Porcupine, Ont.	South Porcupine
Malga Porcupine Gold Mines Ltd.....	Room 808, 85 Richmond St. W., Toronto, Ont.	South Porcupine
McLaren Porcupine Gold Mines Ltd.....	South Porcupine, Ont.	Deloro Tp.
New Electra Porcupine Gold Mines Ltd.....	Room 706, 100 Adelaide St. W., Toronto, Ont.	Macklem Tp.
Wilcar Mines Ltd.....	12th floor, Star Bldg., 80 King St. W., Toronto, Ont.	Wilkie Tp.
<i>Kirkland Lake Area—</i>		
Amalgamated Kirkland Mines Ltd.....	P.O. Box 997, Haileybury, Ont.	Kirkland Lake
Belrosa Mines Ltd.....	Room 1001, 85 Richmond St. W., Toronto, Ont.	Lebel Tp.
Bidgood Kirkland Gold Mines Ltd.....	Room 504, 357 Bay St., Toronto, Ont.	Lebel Tp.
Biroco Kirkland Mines Ltd.....	Room 1705, 372 Bay St., Toronto, Ont.	Gauthier Tp.
Darnac Gold Mines Ltd.....	Room 303, 156 Yonge St., Toronto, Ont.	Lebel Tp.
Erin Kirkland Mines Ltd.....	Room 1104, 67 Yonge St., Toronto, Ont.	Lebel Tp.
Glenora Gold Mines Ltd.....	Room 3100, 25 King St., Toronto, Ont.	Lebel Tp.
Golden Gate Mining Co. Ltd.....	Room 411, 371 Bay St., Toronto, Ont.	Swastika
Kirkland Lake Gold Mining Co. Ltd.....	Chaput Hughes	Teek Tp.
Lake Shore Mines Ltd.....	Kirkland Lake, Ont.	Kirkland Lake
Macassa Mines Ltd.....	35 Richmond St. W., Toronto, Ont.	Kirkland Lake
Sylvanite Gold Mines Ltd.....	Box 670, Kirkland Lake, Ont.	Kirkland Lake
The Teek-Hughes Gold Mines Ltd.....	14 Finkle St., Woodstock, Ont.	Kirkland Lake
Toburn Gold Mines Ltd.....	1809 Royal Bank Bldg., Toronto, Ont.	Kirkland Lake
Upper Canada Mines Ltd.....	1101 Federal Bldg., Toronto, Ont.	Dobie
Wright-Hargreaves Mines Ltd.....	Fort Erie, Ont.	Kirkland Lake
Mylake Mines Ltd.....	200 Bay St., Toronto, Ont.	Grenfell Tp.
<i>Larder Lake Area—</i>		
Amalgamated Larder Mines Ltd.....	12th floor, 80 King St. W., Toronto, Ont.	Larder Lake
Anoki Gold Mines.....	1006 Concourse Bldg., Toronto, Ont.	Gauthier Tp.
Armistice Gold Mines Ltd.....	Room 706, 100 Adelaide St. W., Toronto, Ont.	McGarry Tp.
Big Game Mines Ltd.....	Room 501, 67 Yonge St., Toronto, Ont.	Guilford Tp.
Chesterville Larder Lake Gold Mining Co. Ltd.....	Suite 1104, 330 Bay St., Toronto, Ont.	McGarry Tp.
Hermes Mines Ltd.....	Suite 403, 156 Yonge St., Toronto, Ont.	McIlroy Tp.
Highridge Mining Co. Ltd.....	Room 209, 330 Bay St., Toronto, Ont.	McGarry Tp.
Kerr-Addison Gold Mines Ltd.....	Room 1108, 80 King St. W., Toronto, Ont.	McGarry Tp.
Larder "U" Island Mines Ltd.....	Room 209, 330 Bay St., Toronto, Ont.	McGarry Tp.
Omega Gold Mines.....	Larder Lake	McVittie Tp.
Martin-Bird Gold Mines Ltd.....	32 Prospect Ave., Kirkland Lake, Ont.	Hearst Tp.

DIRECTORY OF FIRMS—Continued

Active Operators in the Auriferous Quartz Mining Industry—Continued

Name	Head or executive office address	Location
ONTARIO—Continued		
<i>Larder Lake Area—Concluded</i>		
Mary Ann Mines Ltd.	Room 403, 100 Adelaide St. W., Toronto, Ont.	Larder Lake
Olivet Gold Mines Ltd.	156 Yonge St., Toronto, Ont.	Gauthier Tp.
Temple Gold Mines Ltd.	11 King St. W., Toronto, Ont.	Playfair Tp.
Tovarich-Larder Gold Mines Ltd.	Room 1701, 372 Bay St., Toronto, Ont.	McIlroy Tp.
Wadasa Gold Mines Ltd.	62 Government Road West, Kirkland Lake, Ont.	Gauthier Tp.
<i>Matachewan Area—</i>		
Central Matachewan Mining Co.	331 Bay St., Toronto, Ont.	Baden Tp.
Culver Gold Mines Ltd.	Suite 1007, 67 Yonge St., Toronto, Ont.	Powell Tp.
Young-Davidson Mines Ltd.	Timmins, Ont.	Powell Tp.
Laclothian Mines Ltd.	Suite 1001, 85 Richmond St. W., Toronto, Ont.	Midlothian Tp.
Laroma Midlothian Mines Ltd.	Suite 1705, 372 Bay St., Toronto, Ont.	Midlothian Tp.
Matachewan Consolidated Mines Ltd.	25 King St. W., Toronto, Ont.	Powell Tp.
Welsh-Mac Mines Ltd.	674 Ontario St., Toronto, Ont.	Tyrrell Tp.
<i>Sudbury Area—</i>		
Camdeek Gold Mines Ltd.	Box 963, Kirkland Lake, Ont.	Knight Tp.
Jerome Gold Mines Ltd.	Suite 602, 350 Bay St., Toronto, Ont.	Jerome
Rush Lake Gold Mines Ltd.	Suite 504, 357 Bay St., Toronto, Ont.	Marion Tp.
Shunshy Gold Mines Ltd.	Suite 504, 357 Bay St., Toronto, Ont.	Stover Tp.
Wanapitei Basin Mines Ltd.	130 Carlton St., Toronto, Ont.	Scadding Tp.
<i>Thunder Bay Area—</i>		
Charles Long Lac Gold Mines Ltd.	Suite 1104, 67 Yonge St., Toronto, Ont.	Long Lac
Hard Rock Gold Mines Ltd.	Geraldton	Ashmore Tp.
Leitch Gold Mines Ltd.	Beardmore	Summers Tp.
Little Long Lac Gold Mines Ltd.	Room 3100, 25 King St. W., Toronto, Ont.	Ashmore Tp.
MacLeod-Cockshutt Gold Mines Ltd.	357 Bay St., Toronto, Ont.	Geraldton
Magnet Consolidated Mines Ltd.	515 Jarvis St., Toronto, Ont.	Geraldton
Marquette Long Lac Gold Mines Ltd.	Room 503, 357 Bay St., Toronto, Ont.	Long Lac
<i>Kenora Area—</i>		
Andowan Mines Ltd.	Kashabowie	Shebandowan Lake
Jack Lake Mines Ltd.	190A Adelaide St., Toronto, Ont.	McCaull Tp.
Van Houten Gold Mines Ltd.	171 Yonge St., Toronto, Ont.	Dymont
Undersill Gold Mining Co. Ltd.	14 Wall St., New York, N.Y.	Beardmore
<i>Patricia District—</i>		
Advance Red Lake Gold Mines Ltd.	Room 701, 347 Bay St., Toronto, Ont.	Red Lake
Aiken Red Lake Gold Mines Ltd.	Room 303, 53 Yonge St., Toronto, Ont.	Red Lake
Bayview Red Lake Gold Mines Ltd.	80 Richmond St. W., Toronto, Ont.	Todd Tp.
Berens River Mines Ltd.	Favourable Lake	Favourable Lake
Bright Red Lake Mines Ltd.	Room 311, 21 King St. E., Toronto, Ont.	Fairlie Tp.
Buffalo Red Lake Mines Ltd.	Room 1701, 372 Bay St., Toronto, Ont.	Red Lake
Campbell Red Lake Mines Ltd.	Room 620, Richmond St. E., Toronto, Ont.	Red Lake
Carricoma Gold Mines Ltd.	Room 305, 350 Bay St., Toronto, Ont.	Heyson Tp.
Central Patricia Gold Mines Ltd.	Central Patricia, Ont.	Central Patricia
Cochenour Willans Gold Mines Ltd.	801 Dominion Bank Bldg., Toronto, Ont.	Mackenzie Island
Craibbe-Fletcher Gold Mines Ltd.	Suite 1, 26-28 Adelaide St. W., Toronto, Ont.	Dome Tp.
Crowshore Patricia Gold Mines Ltd.	171 Yonge St., Toronto, Ont.	Crow River
Dexter Red Lake Gold Mines Ltd.	Room 620, 12 Richmond St. E., Toronto, Ont.	Red Lake
Dickinson Red Lake Mines Ltd.	200 Bay St., Toronto, Ont.	Balmer Tp.
Masaga Gold Mines Ltd.	Red Lake, Ont.	Heyson Tp.
Lingman Lake Gold Mines Ltd.	707 McArthur Bldg., Winnipeg, Man.	Lingman Lake
Lunward Gold Mines Ltd.	Room 714, 320 Bay St., Toronto, Ont.	Echo Tp.
Madsen Red Lake Gold Mines Ltd.	67 Yonge St., Toronto, Ont.	Heyson Tp.
McKenzie Red Lake Gold Mines Ltd.	19 Richmond St. W., Toronto, Ont.	Dome Tp.
Pickle Crow Gold Mines Ltd.	Pickle Crow, Ont.	Pickle Crow
Martin-McNeely Mines Ltd.	24 Fraser St., North Bay, Ont.	Dome Tp.
McFinley Red Lake Gold Mines Ltd.	100 Adelaide St., Toronto, Ont.	Bateman Tp.
McMarnac Red Lake Gold Mines Ltd.	Room 402, 19 Richmond St. W., Toronto, Ont.	Dome Tp.
Mink Gold Mines Ltd.	Room 504, 357 Bay St., Toronto, Ont.	Mink Lake
Red Area Gold Mines Ltd.	80 Richmond St. W., Toronto, Ont.	Fairlie Tp.
Redaurum Red Lake Gold Mines Ltd.	100 Adelaide St. W., Toronto, Ont.	Baird Tp.
Redwood Gold Mines Ltd.	Suite 1024, 85 Richmond St. W., Toronto, Ont.	Heyson Tp.
Richmac Gold Mines Ltd.	Room 1502, 372 Bay St., Toronto, Ont.	Dome Tp.
Russet Red Lake Gold Mines Ltd.	Room 318, 371 Bay St., Toronto, Ont.	Baird Tp.
San Pedro Mining Corp. Ltd.	630 Confederation Life Bldg., Toronto, Ont.	Heyson Tp.
Slate Bay Gold Mines Ltd.	Room 318, 371 Bay St., Toronto, Ont.	McDonough Tp.
Spruce Lake Gold Mines Ltd.	Suite 1007, 67 Yonge St., Toronto, Ont.	Heyson Tp.
Starratt Olsen Gold Mines Ltd.	Red Lake, Ont.	Baird Tp.
Virginia Red Lake Mines Ltd.	Suite 1, 26-28 Adelaide St. W., Toronto, Ont.	Balmer Tp.

DIRECTORY OF FIRMS—Continued

Active Operators in the Auriferous Quartz Mining Industry—Continued

Name	Head or executive office address	Location
MANITOBA—		
Ken-Bay Gold Mines Ltd.	320 Bay St., Toronto, Ont.	Little Stull Lake
Kiwago Gold Mines Ltd.	Electric Railway Chambers, Winnipeg, Man.	Central Manitoba
San Antonio Gold Mines Ltd.	237 Curry Bldg., Winnipeg, Man.	Bissett
Sangold Mines Ltd.	67 Yonge St., Toronto, Ont.	Rice Lake
Tartan Lake Gold Mines Ltd.	330 Bay St., Toronto, Ont.	Athapapukow
Wekusko Consolidated Ltd.	395 Main St., Winnipeg, Man.	Herb Lake
SASKATCHEWAN—		
Nesnah Mining & Exploration Co. Ltd.	320 Bay St., Toronto, Ont.	Beaver Lake
Newcor Mining & Refining Ltd.	67 Yonge St., Toronto, Ont.	Douglas Lake
NORTHWEST TERRITORIES—		
American Yellowknife Gold Mines Ltd.	171 Yonge St., Toronto, Ont.	Yellowknife
Amy Yellowknife Mines Ltd.	55 York St., Toronto, Ont.	Indin Lake
Atlas Yellowknife Mines Ltd.	330 Bay St., Toronto, Ont.	Yellowknife
Aurora Yellowknife Mines Ltd.	100 Adelaide St. W., Toronto, Ont.	Yellowknife
Bravo Yellowknife Mines Ltd.	11 King St. W., Toronto, Ont.	Prosperous Lake
Bruin Yellowknife Mines Ltd.	330 Bay St., Toronto, Ont.	Yellowknife
Bryhern Exploration Development & Mining Ltd.	100 Adelaide St. W., Toronto, Ont.	Yellowknife
Cardinal Yellowknife Mines Ltd.	67 Yonge St., Toronto, Ont.	Yellowknife
Cassidy Yellowknife Mines Ltd.	36 Toronto St., Toronto, Ont.	Yellowknife
Colomac Yellowknife Mines Ltd.	100 Adelaide St. W., Toronto, Ont.	Yellowknife
The Consolidated Mining & Smelting Co. of Canada Ltd.	Trail, B.C.	Yellowknife
Crestaurum Mines Ltd.	25 King St. W., Toronto, Ont.	Yellowknife
Aunax Mining Ltd.	302 Bay St., Toronto, Ont.	Yellowknife
Discovery Yellowknife Mines Ltd.	171 Yonge St., Toronto, Ont.	Yellowknife
Dolphin Yellowknife Mines Ltd.	357 Bay St., Toronto, Ont.	Yellowknife
Frederick Yellowknife Mines Ltd.	100 Adelaide St. W., Toronto, Ont.	Yellowknife
Giant Yellowknife Gold Mines Ltd.	25 King St. W., Toronto, Ont.	Yellowknife
Goldcrest Mines Ltd.	171 Yonge St., Toronto, Ont.	Indin Lake
Goldknife Mines Ltd.	67 Yonge St., Toronto, Ont.	Vital Lake
Great Yellowknife Mines Ltd.	36 Toronto St., Toronto, Ont.	Yellowknife
Homer Yellowknife Mines Ltd.	330 Bay St., Toronto, Ont.	Yellowknife
Ingrahm Yellowknife Mines Ltd.	357 Bay St., Toronto, Ont.	Yellowknife
Jackknife Gold Mines Ltd.	330 Bay St., Toronto, Ont.	Yellowknife
Lake Fortune Gold Mines Ltd.	941 Dominion Square Bldg., Toronto, Ont.	Yellowknife
Leta Explorations Ltd.	67 Yonge St., Toronto, Ont.	Yellowknife
Lexindin Gold Mines Ltd.	67 Yonge St., Toronto, Ont.	Indin Lake
Lynx Yellowknife Gold Mines Ltd.	25 King St. W., Toronto, Ont.	Yellowknife
Massive Yellowknife Mines Ltd.	36 Toronto St., Toronto, Ont.	Yellowknife
Mate Yellowknife Gold Mines Ltd.	85 Richmond St. W., Toronto, Ont.	Yellowknife
Conwest Exploration Co. Ltd.	Spencerville, Ont.	Yellowknife
Nib Yellowknife Mines Ltd.	10 Adelaide St. E., Toronto, Ont.	Yellowknife
Negus Mines Ltd.	410 Royal Bank Bldg., Toronto, Ont.	Yellowknife
Nicholson Mines Ltd.	25 King St. W., Toronto, Ont.	Yellowknife
Pensive Yellowknife Mines Ltd.	80 Richmond St. W., Toronto, Ont.	Yellowknife
Quebec Yellowknife Gold Mines Ltd.	132 St. James St. W., Montreal, Que.	Yellowknife
Ranney Gold Mines Ltd.	25 King St. W., Toronto, Ont.	Yellowknife
Redmont Yellowknife Mines Ltd.	820 Transportation Bldg., Montreal, Que.	Yellowknife
Ryanor Mining Co. Ltd.	85 Richmond St. W., Toronto, Ont.	Yellowknife
Sovereign Yellowknife Mines Ltd.	302 Bay St., Toronto, Ont.	Johnston Lake
Sunset Yellowknife Mines Ltd.	67 Yonge St., Toronto, Ont.	Yellowknife
Tiffany Yellowknife Mines Ltd.	11 King St. W., Toronto, Ont.	Yellowknife
Trans-American Mining Corp. Ltd.	55 York St., Toronto, Ont.	Yellowknife
Transcontinental Resources Ltd.	25 King St. W., Toronto, Ont.	Yellowknife
Transerra Mines Ltd.	85 Richmond St. W., Toronto, Ont.	Yellowknife
Yellorex Mines Ltd.	330 Bay St., Toronto, Ont.	Yellowknife
BRITISH COLUMBIA—		
Bralorne Mines Ltd.	555 Burrard St., Vancouver, B.C.	Bralorne
Barkerville Mining Co. Ltd.	607 Rogers Bldg., Vancouver, B.C.	Wells
Berton Gold Mines Ltd.	815 West Hastings St., Vancouver, B.C.	Alberni
Bridge River Consolidated Mines Ltd.	475 Howe St., Vancouver, B.C.	Goldbridge
B.R.X. (1935) Consolidated Mines Ltd.	475 Howe St., Vancouver, B.C.	Shalthat
Cariboo Gold Quartz Mining Co. Ltd.	1007 Royal Bank Bldg., Vancouver, B.C.	Wells
Cariboo Mine	Rock Creek, B.C.	Greenwood
Gem Gold Mines Ltd.	1604 Royal Bldg., Vancouver, B.C.	Nanaimo
Gold Belt Mining Co. Ltd.	Sheep Creek, B.C.	Sheep Creek
Gold Drop Mines Ltd.	Stewart, B.C.	Marmot River
Grull-Wilksne Gold Mines Ltd.	475 Howe St., Vancouver, B.C.	Goldbridge
Hedley Mascot Gold Mines Ltd.	903 Royal Bank Bldg., Vancouver, B.C.	Xale
Hellstoke Mining Co. Ltd.	616 Stock Exchange Bldg., Vancouver, B.C.	Bridge River
Hunstone & McLeod.	1225 Nelson St., Vancouver, B.C.	Hedley
Island Mountain Mines Co. Ltd.	Wells.	Wells
Kenville Gold Mines Ltd.	184 Bay St., Toronto, Ont.	Blewett
Kelowna Exploration Co. Ltd.	Hedley.	Osoyoos
I.X.L. Leasing Syndicate.	Rossland.	Trail Creek
D.H. & A.G. Norcross.	Nelson.	Nelson
Pacific (Eastern) Gold Mines Ltd.	184 Bay St., Toronto, Ont.	Lillooet
Pellaire Mines Ltd.	184 Bay St., Toronto, Ont.	Clinton
Pioneer Gold Mines of B.C. Ltd.	607 Rogers Bldg., Vancouver, B.C.	Lillooet
Privateer Mine Ltd.	475 Howe St., Vancouver, B.C.	Zeballas

DIRECTORY OF FIRMS—Continued

Active Operators in the Auriferous Quartz Mining Industry—Concluded

Name	Head or executive office address	Location
Prosperine Mines Ltd.....	607 Rogers Bldg., Vancouver, B.C.....	Wells
Second Relief Mine.....	Salmo.....	Nelson
Sheep Creek Gold Mines Ltd.....	616 Stock Exchange Bldg., Vancouver, B.C.....	Sheep Creek
Silbak Premier Mines Ltd.....	626 Pender St. W., Vancouver, B.C.....	Portland Canal

Operators in Copper-Gold-Silver Mining Industry

QUEBEC—		
Aldermac Copper Corp. Ltd.....	941 Dominion Square Bldg., Montreal, Que..	/Beauchastel Tp. { Ascot Tp. Desmeloizes Tp. Chibougamau Rouyn Tp.
Alamac Mines Ltd. (x).....	132 St. James St. W., Montreal, Que.....	
Area Mines Ltd. (x).....	80 King St. W., Toronto, Ont.....	
Bagamac Mines Ltd. (x).....	Oak Ridges, Ont.....	
Cons. Mining & Smelting Co. of Canada Ltd. (x).....	215 St. James St. W., Montreal, Que.....	Bourlamaque Tp.
Copper Hill Mining Co. Ltd. (x).....	100 Adelaide St. W., Toronto, Ont.....	Dufresnay Tp.
East Sullivan Mines Ltd. (x).....	1604 Aldred Bldg., Montreal, Que.....	Bourlamaque Tp.
Gan Copper Mines Ltd. (x).....	293 Bay St., Toronto, Ont.....	Beauchastel Tp.
Horne Fault Mines Ltd. (x).....	Duparquet.....	Beauchastel Tp.
Joliet-Quebec Mines, Ltd. (x).....	25 King St. W., Toronto, Ont.....	Rouyn Tp.
Lake Dufault Mines Ltd.....	Duparquet.....	Dufresnoy Tp.
Macdonald Mines Ltd. (x).....	414 St. James St. W., Montreal, Que.....	Dufresnoy
Noranda Mines Ltd.....	1600 Royal Bank Bldg., Toronto, Ont.....	Noranda
Normetal Mining Corp. Ltd.....	Suite 602, 350 Bay St., Toronto, Ont.....	Desmeloizes Tp.
Quemont Mining Corp. Ltd. (x).....	Suite 602, 350 Bay St., Toronto, Ont.....	Rouyn Tp.
Touton Mining & Exploration Co. Ltd. (x).....	500 Place d'Armes, Montreal, Que.....	Fabre Tp.
Vachon-Vachon Prospecting Soc. (x).....	138 Cockburn St., Drummondville.....	Beauce Co.
Waite Amulet Mines Ltd.....	Noranda.....	{ Duprat Tp. { Dufresnoy Tp.
West Amulet Mines Ltd. (x).....	Room 2810, 25 King St. W., Toronto, Ont...	Duprat Tp.
ONTARIO—		
Bi-Ore Mines Ltd. (x).....	236 Spruce St., Sudbury, Ont.....	Hoffman Tp.
Freeport Exploration Co. (x).....	302 Bay St., Toronto, Ont.....	Shebandowan
Lobanor Gold Mines Ltd. (x).....	Room 318, 331 Bay St., Toronto, Ont.....	Shebandowan
Royalite Gold Synd. (x).....	c/o H. Goldman, 569 Church St., Toronto, Ont.....	Salter Tp.
MANITOBA—		
Hudson Bay Mining & Smelting Co. Ltd.....	500 Royal Bank Bldg., Winnipeg, Man.....	Flin Flon
International Mining Corp. (x).....	622 Federal Bldg., Toronto, Ont.....	Various
Sherritt Gordon Mines Ltd.....	Room 2810, 25 King St. W., Toronto, Ont.....	Sherridon
SASKATCHEWAN—		
Hudson Bay Mining & Smelting Co. Ltd.....	500 Royal Bank Bldg., Winnipeg, Man.....	Flin Flon
BRITISH COLUMBIA—		
Britannia Mining & Smelting Co. Ltd.....	Britannia Beach.....	Britannia Beach
Granby Cons. Mining, Smelting & Power Co. Ltd.....	675 West Hastings St., Vancouver, B.C.....	Copper Mountain
Marble Bay Mining Co. Ltd. (x).....	626 West Pender St., Vancouver, B.C.....	Texada Island
Red Hawk Gold Mines Ltd. (x).....	805 West Pender St., Vancouver, B.C.....	Nanaimo
Santiago Mines Ltd. (x).....	423 Hamilton St., Vancouver, B.C.....	Lasqueti Island
Vananda Mining Co. Ltd. (x).....	607 Rogers Bldg., Vancouver.....	Texada Island

(x) Active but not producing.

List of Operators in the Silver-Cobalt Mining Industry

(x) Active but no shipments made.

Name of Operator	Head office address	Location of mine
ONTARIO—		
Augener Mines Ltd. (x).....	Box 643, Cobalt, Ont.....	Coleman Tp.
Ausie Mining & Reduction Co. Ltd. (Genesee and Silver Cliff).....	Box 643, Cobalt, Ont.....	Coleman Tp.
Bond, S. B. (University).....	Cobalt, Ont.....	Cobalt
Cross Lake Lease (O'Brien).....	Box 390, Cobalt, Ont.....	Coleman Tp.
Cross Lake Lease (Miller Lake O'Brien).....	Box 390, Cobalt, Ont.....	Haultain Tp.
Mercier, Raoul (Foster).....	Box 547, Cobalt, Ont.....	Coleman Tp.
O'Shaughnessy, C. V. J. (O'Brien mill).....	Box 319, Cobalt, Ont.....	Cobalt
Nipissing Mining Co. Ltd.....	302 Bay St., Toronto, Ont.....	Cobalt
Price, C. H. (Kerr Lake).....	Cobalt, Ont.....	Kerr Lake
Silanco Mining & Smelting Corp. Ltd.....	45 Richmond St. W., Toronto, Ont.....	Cobalt Dist.
Silco Mines Ltd. (x).....	Suite 501, 67 Yonge St., Toronto, Ont.....	Gillies Limit
Sutherland, J. H. (Lawson).....	Cobalt, Ont.....	Coleman Tp.

NOTE.—In addition to the names listed, there were some small shippers from whom official reports were unobtainable. Mine names shown in brackets.

DIRECTORY OF FIRMS—Continued

Principal Operators in the Silver-Lead-Zinc Mining Industry

(x) Active but not producing.

Name of operator	Head office address	Location of mine
QUEBEC—		
Federal Zinc & Lead Co. Ltd. (x).....	708 Drummond Bldg., Montreal, Que.	Lemieux Tp.
Golden Manitou Mines Ltd.	Room 1104, 330 Bay St., Toronto, Ont.	Bourlamaque Tp.
Lyall and Beidelman (x).....	708 Drummond Bldg., Montreal, Que.	Lemieux Tp.
New Calumet Mines Ltd.	25 King St. W., Toronto, Ont.	Calumet Island
Perras Permas Synd. (Tetreault mine).....	4 Notre Dame St. E., Montreal, Que.	Portneuf Co.
Siscoe Metals Ltd. (Tetreault mine).....	907 Dominion Square Bldg., Montreal, Que.	Portneuf Co.
BRITISH COLUMBIA—		
Ainsmore Consolidated Mines Ltd.	Ainsworth, B.C.	Ainsworth
Base Metals Mining Corp. Ltd.	350 Bay St., Toronto 1, Ont.	Field
Cons. Mining & Smelting Co. of Can. Ltd.	Trail	Kimberley
Doney, Ernest (Victor).....	Box 414, New Denver.....	Slocan, M.D.
Highland Bell Ltd.	Creston.....	Beaverdell
Kootenay Belle Gold Mines Ltd. (a).....	916 Stock Exchange Bldg., Vancouver, B.C.	Retallack
Lincoln, Paul.....	490 Baker St., Nelson, B.C.	Slocan
Providence Mine Synd.	Box 629, Greenwood.....	Greenwood
Silver Ridge Mining Co. Ltd.	Sandou, B.C.	Slocan
Sheep Creek Gold Mines Ltd.	616 Stock Exchange Bldg., Vancouver, B.C.	Zineton
Western Exploration Co. Ltd.	Silverton.....	Kaslo, M.D.
YUKON—		
Treadwell Yukon Corp.	1022 Crocker Bldg., San Francisco, Cal.	

(a) Retallack Mines project.

Firms in the Nickel-Copper Mining, Smelting and Refining Industry, 1945

NOTE.—(x) Active but not producing.

Name of firm	Head office address	Location of plant
ONTARIO—		
Falconbridge Nickel Mines, Ltd.	304 Bay St., Toronto, Ont.	Falconbridge Tp.
International Nickel Company of Canada, Limited.....	Copper Cliff, Ont.	Mines: Tps. of Levack, Snider, McKim and Garson, Smelters: Copper Cliff and Coniston Nickel refinery: Port Colborne Copper refinery: Copper Cliff
Nickel Offsets Ltd. (x).....	Room 1701, 372 Bay St., Toronto, Ont.	Foy Tp.
North Range Nickel Mines Ltd. (x).....	Suite 501, 67 Yonge St., Toronto, Ont.	Bowell Tp.
Ontario Nickel Mines Ltd.	Room 305, 350 Bay St., Toronto, Ont.	Moose Lake

FIRMS IN THE MISCELLANEOUS METAL MINING INDUSTRY

(*) Active but not producing.

Name of firm and product	Head office address	Location of mine or plant
Aluminum—		
Aluminum Company of Canada Limited.....	1700 Sun Life Bldg., Montreal, Que.	Arvida, Que. Shawinigan Falls, Que. La Tuque, Que. Isle Maligne, Que. Beauharnois, Que.
Antimony—		
Consolidated Mining & Smelting Company of Canada Ltd.	215 St. James St., Montreal, Que.	Trail, B.C.
Beryl—		
Canadian Beryllium Mines & Alloys Ltd. (*).....	Room 401, 100 Adelaide St. W., Toronto, Ont.	Renfrew Co., Ont.
Blismuth—		
Deloro Smelting & Refining Co. Ltd. (*).....	900 Victoria Bldg., Ottawa, Ont.	Deloro, Ont.
Consolidated Mining & Smelting Company of Canada Ltd.	215 St. James St., Montreal, Que.	Trail, B.C.

DIRECTORY OF FIRMS—Continued

FIRMS IN THE MISCELLANEOUS METAL MINING INDUSTRY—Concluded

(*) Active but not producing.

Name of firm and product	Head office address	Location of mine or plant
Cadmium—		
Consolidated Mining & Smelting Company of Canada Ltd.....	215 St. James St., Montreal, Que.....	Trail, B.C.
Hudson Bay Mining & Smelting Co. Ltd.....	500 Royal Bank Bldg., Winnipeg, Man.....	Flin Flon, Man.
Chromite—		
Chrome Association.....	342 Notre Dame St., Black Lake, Que.....	Black Lake, Que.
Chromite Ltd.....	404 Notre Dame St. W., Montreal, Que.....	Cleveland Twp., Que.
Pare, Orel.....	Black Lake, Que.....	Coleraine Twp., Que.
Iron Ore—		
Hollinger North Shore Exploration Co. Ltd. (*).....	721 Royal Bank Bldg., Montreal, Que.....	N.E. Quebec, Que.
Labrador Mining & Exploration Co. Ltd. (*).....	721 Royal Bank Bldg., Montreal, Que.....	Labrador, Que.
Algoma Ore Properties Ltd.....	Cornwall Bldg., Sault Ste. Marie, Ont.....	Algoma dist., Ont.
Michipicoten Iron Mines Ltd. (*).....	25 King St. W., Toronto, Ont.....	Algoma dist., Ont.
Rebair Gold Mines Ltd. (*).....	9 Adelaide St. E., Toronto, Ont.....	Atikokan, Ont.
Steep Rock Iron Mines Ltd.....	25 King St. W., Toronto, Ont.....	Rainy River dist., Ont.
Tomahawk Iron Mines Ltd. (*).....	Suite 405, 67 Yonge St., Toronto, Ont.....	Hastings Co., Ont.
Rawn Iron Mines Ltd. (*).....	Atikokan, Ont.....	Steep Rock Lake, Ont.
Indium—		
Consolidated Mining & Smelting Company of Canada Ltd.....	215 St. James St., Montreal, Que.....	Trail, B.C.
Lithium Ore—		
Hudson Bay Mining & Smelting Co. Ltd. (*).....	500 Royal Bank Bldg., Winnipeg, Man.....	Cat Lake, Man.
Lithium Corporation of Canada Ltd. (*).....	403 Avenue Bldg., Winnipeg, Man.....	Bernic and Cat Lakes, Man.
Sheritt Gordon Mines Ltd. (*).....	25 King St. W., Toronto, Ont.....	Crowduck Bay, Man.
		East Braintree, Man.
Magnesium—		
Consolidated Mining & Smelting Company of Canada Ltd. (*).....	215 St. James St., Montreal, Que.....	Trail, B.C.
Dominion Magnesium Ltd.....	Room 1107, 67 Yonge St., Toronto, Ont.....	Haley, Ont.
Mercury—		
Bralorne Mines Ltd. (*).....	555 Burrard St., Vancouver, B.C.....	Omineca District, B.C.
Consolidated Mining & Smelting Company of Canada Ltd.....	215 St. James St., Montreal, Que.....	Pinchi Lake, B.C.
Molybdenite—		
Molybdenite Corp. of Canada Ltd.....	59 St. James St. W., Montreal, Que.....	La Corne, Que.
Quyon Molybdenite Co. Ltd. (*).....	Quyon, Que.....	Quyon, Que.
Wartime Metals Corp. (LaCorne Project).....	637 Craig St. W., Montreal, Que.....	Abitibi Co., Que.
Selenium-Tellurium—		
International Nickel Co. of Canada Ltd.....	Copper Cliff, Ont.....	Copper Cliff, Ont.
Canadian Copper Refiners Ltd.....	1600 Royal Bank Bldg., Toronto, Ont.....	Montreal East, Que.
Thallium—		
Hudson Bay Mining & Smelting Co. Ltd. (*).....	500 Royal Bank Bldg., Winnipeg, Man.....	Flin Flon, Man.
Tin—		
Consolidated Mining & Smelting Company of Canada Ltd.....	215 St. James St., Montreal, Que.....	Trail, B.C.
Titanium Ore—		
Baie St. Paul Titanic Iron Ore Co.....	Baie St. Paul, Que.....	St. Urbain, Que.
Coulombe, J.....	71 Ave. Royal Monument, Quebec, Que.....	St. Urbain, Que.
Simack Ulmenite Co. Ltd.....	c/o C. N. Knowles & Co., 360 St. James St. W., Montreal, Que.....	Romaine River dist., Que.
Loughborough Mining Co. Ltd.....	Sydenham, Ont.....	St. Urbain, Que.
Tungsten Concentrates—		
Hollinger Cons. Gold Mines Ltd. (*).....	Timmins, Ont.....	Timmins, Ont.
Wartime Metals Corp. (Emerald Tungsten Project) (*).....	637 Craig St. W., Montreal, Que.....	Salmon, B.C.

DOMINION BUREAU OF STATISTICS

DIRECTORY OF FIRMS—Continued

Firms in the Non-Ferrous Smelting and Refining Industry

Name of firm	Head or executive office address	Location of plant
Quebec—		
Aluminum Company of Canada Ltd.	1700 Sun Life Bldg., Montreal, Que.	Arvida, La Tuque, Shawinigan Falls, Isle Maligne, Beauharnois
Canadian Copper Refiners Ltd.	1600 Royal Bank Bldg., Toronto, Ont.	Montreal East
Noranda Mines Limited.	1600 Royal Bank Bldg., Toronto, Ont.	Noranda
Ontario—		
Deloro Smelting & Refining Co. Limited.	Deloro.	Deloro
Dominion Magnesium Ltd.	67 Yonge St., Toronto, Ont.	Haley
Eldorado Mining and Refining.	80 King St. W., Toronto, Ont.	Port Hope
Falconbridge Nickel Mines Ltd.	304 Bay St., Toronto, Ont.	Falconbridge
International Nickel Co. of Canada Limited.	Copper Cliff.	Copper Cliff, Coniston, Port Colborne
Manitoba—		
Hudson Bay Mining and Smelting Co. Limited	500 Royal Bank Bldg., Winnipeg, Man.	Flin Flon
British Columbia—		
Consolidated Mining & Smelting Co. of Canada Limited.	Trail, B.C.	Trail

NON-METAL MINING INDUSTRIES, INCLUDING FUELS

FUELS

DIRECTORY OF FIRMS—Continued

Coal Mining Industry

Operator	Head office	Mine location and mine office
NOVA SCOTIA—		
Bras d'Or Coal Co., Ltd.	Bras d'Or	Cape Breton Co., Bras d'Or Cape Breton Co., Bras d'Or, ½ mi. N. of
Dominion Coal Co., Ltd.	Sydney	Cape Breton Co. Glance Bay, O'Neil Point Glance Bay, New Aberdeen Glance Bay, Caledonia Glance Bay, Passchendale New Waterford New Waterford, 1 mi. W. of Glance Bay, New Aberdeen Glance Bay, Caledonia Gardiner
Indian Cove Coal Co., Ltd.	Sydney Mines, Drawer P.	Glance Bay, O'Neil Point Cape Breton Co., Sydney Mines, S. side
Old Sydney Collieries, Ltd.	Sydney Mines	Cape Breton Co., Sydney Mines, W. of Cape Breton Co., Sydney Mines, Cranberry Head Cape Breton Co., Florence, 2 mi. NW. of Sydney Mines
Campbell & Son, A. J.	Inverness	Inverness Co., Inverness
Chestico Coal Co. (McDonald, McIsaac & Jones)	Port Hood, Box 26	Inverness Co., Port Hood
Evans, Dean	Chimney Corner	Inverness Co., St. Rose
Inverness Coal Mine	Inverness	Inverness Co., Inverness
Margaree Steamship Co., Ltd.	Inverness (Sydney)	Inverness Co., Inverness
MacLellan, John A.	Inverness, Box 223	Inverness Co., Inverness
Cumberland Ry. & Coal Co.	Springhill	Cumberland Co., Springhill Cumberland Co., Springhill Cumberland Co., Springhill Cumberland Co., River Hebert
Hillcrest Mining Co., Ltd.	River Hebert	Cumberland Co., River Hebert
Joggins Coal Co., Ltd.	Amherst, 50 Church St.	Cumberland Co., Joggins, 1 mi. N. of Cumberland Co., River Hebert
Riverside Coal Co. (Deal, Merson & Darling)	Fairview	Cumberland Co., River Hebert
Standard Coal Co., Ltd.	Amherst, 50 Church St.	Cumberland Co., River Hebert, E. of river
Acadia Coal Co., Ltd.	Stellarton	Pictou Co., Stellarton, W. side of Pictou Co., Stellarton, N. side of Pictou Co., Stellarton, W. of Albion mine
Greenwood Coal Co., Ltd.	New Glasgow	Pictou Co., Thorburn
Intercolonial Coal Co., Ltd.	Westville	Pictou Co., Coalburn Pictou Co., Westville, S. and N. sides
Wadden, W. H.	Westville, P.O. Box 585	Pictou Co., Westville Pictou Co., Westville
NEW BRUNSWICK—		
Avon Coal Co., Ltd.	Saint John, Box 940	Minto, South of, near Rothwell xMinto, South of, near Rothwell
Crawford, E. S. & Sons	Newcastle Creek	Minto, 2½ mi. E. of, on lake road
Evans, W. B. (Rothwell Coal Co., Ltd., Lessee)	Rothwell	Rothwell South
Fearon, Bertram	Beersville	Beersville, on Coal Branch river
Pitton, James	Minto	New Zion, 7 mi. S.W. of Minto
Flower, James I., for B. B. Flower	Minto, R.R. 2	Flower Cove, 4 mi. S. of Minto on lake road
General Contractors	Chipman	Coal Creek, South of
Girvan, H. H.	Jailletville	Beersville, on Coal Branch River, S. side of, at Big Brook fork

DOMINION BUREAU OF STATISTICS

DIRECTORY OF FIRMS—Continued

Coal Mining Industry—Continued

Operator	Head office	Mine location and mine office
NEW BRUNSWICK—Concluded		
Glencross, Wm. Irving.....	Beersville.....	Beersville, on Coal Branch River
Horgan, Frank J., Contractor.....	Chipman.....	Long Creek
King, Gerald H.....	Chipman.....	Chipman, 4 mi. S. of (Coal Creek)
MacDonald, John F. (<i>Operator for Rothwell Coal Co.</i>).....	Minto, R.R. 2.....	Newcastle Creek on lake road; 2½ mi. E. of Minto
McMann, Hugh H.....	Newcastle Creek.....	Newcastle Creek, Block 2, 2½ mi. E. of Minto on lake road
Miramichi Lumber Co., Ltd.....	Minto.....	North and South of Minto
Mitchell, Parker M.....	Water St., W. St. John.....	Minto
Newcastle Coal Co.....	Minto, Box 201.....	Chipman
(A. D. Taylor, <i>Lessee</i>).....		Newcastle Bridge, S. of C.P. Ry.
Reid, Thos.....	Beersville.....	Beersville, on Coal Branch River, W. side of
Sullivan, Robt. H. (for Miramichi Lumber Co.).....	Minto.....	Minto
Welton & Henderson, Ltd.....	Minto.....	Minto
Wasson, A. W. (A. G. Woodcock, <i>Lessee</i>).....	Newcastle Creek.....	Minto, 8 mi. S.E. of
Yeamans, Roy.....	Newcastle Bridge.....	Minto, 1½ mi. S.E. of
ONTARIO—		
Ontario Department of Mines.....	Toronto 2, Parliament Bldgs.....	Onakawana, a station on the T. & N.O. Ry., 126 miles N. of Cochrane (West side of Abitibi River)
(H. C. Rickaby, Deputy Minister)		

SASKATCHEWAN

SOURIS AREA

Operator	Head office	Mine location				Mine office		
		Section		Tp.	R. W.			
		Part L. S. No.						
Banks, Harry.....	Bienfait, Box 137.....		31	1	6	2	Bienfait	
Coates & Kingdon.....	Bienfait.....	F. N ½	19	2	6	2	Bienfait	
xEastern Collieries of Bienfait, Ltd.....	Estevan, Box 359.....	Fl.	13	2	7	2	Bienfait	
Havanah Collieries, Ltd.....	Estevan.....	10, 14	14	2	7	2	Bienfait	
xManitoba & Saskatchewan Coal Co.....	Winnipeg, 503 Avenue Bldg.	½	10	2	6	2	Bienfait	
	Bienfait.....	xx	2	2	6	2	Bienfait	
North West Coal Co. (A. Konapaki, Operator).....	Bienfait.....	NW	10	2	7	2	Bienfait	
*Reidel Bros. Coal Mine, Lessees.....	Estevan, Box 336.....	11, 14	22	2	7	2	Bienfait	
South Cambrian, Ltd.....	Pinto.....	8	35	1	6	2	Pinto	
Uhrich, Mrs. E., & Hugh Banks.....	Pinto.....	14	35	1	6	2	Pinto	
xWestern Dominion Coal Mines, Ltd.††.....	Taylorlton.....		5	2	6	2	Taylorlton	
		xx	8	2	6	2	Taylorlton	
			5	2	6	2	Taylorlton	
Wheeler & Enmark.....	Bienfait.....		19	2	6	2	Bienfait	
*Andersen, Niels.....	Estevan, Box 59.....	12, 13	28	1	8	2	Estevan	
Bourquin & Sons, Geo.....	Estevan.....	1, 2, 3	11	2	8	2	Estevan	
Bourquin & Sons, L. E.....	Estevan, Box 287.....	9, 10	12	2	8	2	Estevan	
†Flower Bros., Lessees.....	Estevan, Box 501.....	FL.	3	4	2	8	2	Estevan
High Grade Mine. (John Olshanoski & S. Betland, Lessees).....	Estevan, Box 167.....		33	1	8	2	Estevan	
Jenish Bros. (Joe. & Eng.).....	Estevan, Box 510.....	10	1	2	8	2	Estevan	
Nicholson Coal Mine. (S. Osjust, Operator).....	Estevan.....	16	2	2	8	2	Estevan	
Tajc, Ed., & P. H. Frank.....	Estevan.....	1, 2	32	1	8	2	Estevan	
Tisdale, A. E.....	Estevan.....	13	33	1	8	2	Estevan	
xRoche Percée Coal Mining Co., Ltd.....	Roche Percée.....	26		1	7	2	Roche Percée	

BENGOUGH, WILLOW BUNCH AND WOOD MOUNTAIN AREAS

*Beahm, Geo. R.....	Minton.....	SE.	17	3	21 2	Minton
Berge, J. Telford.....	Buffalo Gap.....		5 30	2	25 2	Buffalo Gap
Brown, Alton G.....	Wideview.....	SE.9 NE.8 18		3	8 3	Wideview
Caplette, J. E.....	St. Victor.....	N.½	13 2	6	30 2	St. Victor
Coronach Coal Mine (Jos. Brandiez, <i>Operator</i>).....	Coronach.....		5, 6 11	2	27 2	Coronach

DIRECTORY OF FIRMS—Continued

Coal Mining Industry—Continued

SASKATCHEWAN—Concluded

BENGOUGH, WILLOW BUNCH AND WOOD MOUNTAIN AREAS—Concluded

Operator	Head office	Mine location			Mine office
		Section	Tp. R. W.		
		Part L. S. No.			
Culbert, W.	Minton	10, 15	26	3 20 2	Minton
Desjardins, Fred	Willow Bunch	15	13	5 28 2	Willow Bunch
Dumais, O., <i>Lessee</i>	Willow Bunch	3	24	4 27 2	Willow Bunch
Eidsness, E., <i>Lessee</i>	Minton	9, 10	4	1 21 2	Minton
Fair, James F.	Harpree	6, 11	32	3 26 2	Harpree
Finnberg, Nils	Fir Mountain	13 7 4 18 16 12 (1 13)		4 4 3	Fir Mountain
Fister, Jesse J.	Big Beaver	11	30	1 23 2	Big Beaver
Fontaine, E.	St. Victor	10, 15	33	5 29 2	St. Victor
Garraway, A. J.	Fife Lake	(13, 16)	(31, 32)	1 28 2	Fife Lake
Hedin, M., & Seida, J.	Assiniboia	3, 4, 5, 6, 12	10	7 30 2	Assiniboia
Lacerte, J., & J. B. Short	Scout Lake	12	13	5 30 2	Scout Lake
Lapointe, Louis	Buffalo Gap	6	29	2 25 2	Buffalo Gap
Leatherdale, Don	Gladmar	1, 2, 8	11	3 19 2	Gladmar
Lebeck, Anton	Buffalo Gap	9	30	2 25 2	Buffalo Gap
xLee, Magnus, <i>Operator</i>	Big Beaver	7	18	2 22 2	Big Beaver
*McGillis, Wilf	Willow Bunch	5	14	5 28 2	Willow Bunch
Mattson, Geo. and Wagner	Bengough	14, 15	9	5 22 2	Bengough
Morrow, G. R.	Big Beaver	2	16	2 23 2	Big Beaver
*Ott, Mrs. H. (Flora)	Bengough	1, 2, 8	11	4 23 2	Bengough
(Louis Guse, <i>Operator</i>)		9	3		
Pohl, Henry	Buffalo Gap	E. $\frac{1}{2}$	12 2	3 25 2	Gallocks
Porter, L. W.	Willow Bunch	10, 11	23	4 27 2	Willow Bunch
Robinson, H.	Buffalo Gap	16	11	2 26 2	Buffalo Gap
Salaba, Frank G.	Willow Bunch	1, 2, 7, 8	17	5 27 2	Willow Bunch
Salaba, G. J., <i>Operator</i>	Willow Bunch	1	18	5 27 2	Willow Bunch
Slater, Dan	Bengough	4	17	5 22 2	Ritchie
Spooner & McEwen	Bengough	1, 2	16	4 23 2	Bengough
Straza, Dan J.	Wood Mountain Station	9, 16	10	5 4 3	Wood Mountain Station
Thatcher, G. C.	Stonehenge	4	15	5 4 3	Stonehenge
xWarren, Wm.	Fife Lake	3, 9, 14, 15	20	6 1 3	Fife Lake
Wilhelm, Roy and Robert	Verwood	N. $\frac{1}{2}$ S. $\frac{1}{2}$	10 28 15	1 28 2	Verwood
		11, 12	29	6 27 2	

SHAUNAVON AND EAST END AREAS

Bednarik, John	Shaunavon	4, 5	3	9 18 3	Kelstern (5 mi. NW. of Shaunavon)
Bowman Mine (L. F. Wilkins, <i>Owner</i>)	Shaunavon	9	22	7 19 3	Shaunavon, SW. of
*Cox, W. J.	Shaunavon	13	30	7 18 3	Shaunavon, S. of
*Freeman, Bruce	South Fork	13	36	7 21 3	South Fork
xGosselin, Clement	Dollard, Box 18	4	9	7 19 3	Dollard, S. of
Jacques, Joseph E., <i>Operator</i>	South Fork	9, 10	35	7 18 3	South Fork
Knoblauch, Ernest	Shaunavon, Box 512	3	31	6 22 3	Shaunavon, S. of
Larsen, Peter	East End	14	13	7 18 3	East End, W. of
Spirka, K.	Shaunavon	1	4	9 18 3	Kelstern, W. of
xWilkins, Herman W.	Shaunavon, Box 312	3	30	7 18 3	Shaunavon, S. of
Wilkins, Leonard F., <i>Owner</i> (See also Bowman mine)	Shaunavon, Box 304	4, 6	23	7 19 3	Shaunavon, S. of
		4	23	7 19 3	Shaunavon, S. of

ALBERTA

ARDLEY

Barrell, Wm. & A. Auvigne	Ardley	10	20	38 23 4	Ardley
Blades, Jas.	Delburne, R.R. 2	3	4 15	38 22 4	Delburne
Anderson, A.	Delburne	3	17	38 23 4	Delburne
Kehl & McGladrie	Nevis	4	5 35	37 22 4	Nevis
Kurp, Carl B.	Delburne	4	7	38 23 4	Alix
Lynass, John H.	Delburne, Box 445	16	7	38 23 4	Delburne
Munro & Son, S. S.	Ardley	12	35	38 23 4	Ardley
Sissons, John W.	Alix	(E. of C.N.R.)	6 33	38 23 4	Alix
Russell, Chas. M.	Alix, R.R. 1	W. $\frac{1}{2}$	3 29	38 23 4	Alix
Straub, F. A. (J. C. Craig, <i>Operator</i>)	Alix, R.R.	N.E. $\frac{1}{4}$	5 17	38 23 4	Alix

DIRECTORY OF FIRMS—Continued

Coal Mining Industry—Continued

ALBERTA—Continued

BIG VALLEY

Operator	Head office	Mine location						Mine office
		Section			Tp. R. W.			
		Part L. S. No.						
Big Valley Coal Co. (John McAllister & Robt.)	Big Valley.....	1 26			35 20 4			Big Valley
Campkin & Sons, Robt.....	Lousana, R.R. 1.....	15 16 12			36 22 4			Elnora
Ginther & Boise.....	Elnora.....	N. ½	7 30		34 21 4			Elnora

BROOKS

Kleenbirn Collieries, Ltd.	Eyremore	1, 2 7, 8	15	17 17 4		Eyremore (Kitsim)
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CAMROSE

Burnstad, Sigurd H.	Ohaton	3, 6 14		48 18 4		Ohaton
Alberta Coal Co., Ltd.	Calgary, 332-7 Ave. W. .	2, 7 29		46 19 4		Camrose
Proskow, Joseph.	Dinant	3, 4 18		48 19 4		Dinant
Red Flame Coal Co., Ltd.	Round Hill	SW. ¼ { 14 19 7 30		48 18 4		Round Hill
Shute, Geo. <i>et al.</i>	Dinant	N. ½ 8, 9 7		48 19 4		Dinant
Strilchuk, Leo.	Ohaton, R.R. 2	8 10		48 18 4		Ohaton

CARBON

Balogh Bros. (Arctic C. Co.)	Carbon, Box 252	9, 16 12		29 23 4		Carbon
Campbell, C. C.	Trochu	9, 10 29		33 22 4		Trochu
Davidson, W. W.	Three Hills	E. ½ 2 9		31 22 4		Ghost Pine Creek
East Carbon Coal Co., Ltd. (Fox Bros., Operators)	Carbon	10 7		29 22 4		Carbon
East Trochu Coal Mine	Trochu	10, 9 14 15, 16		33 23 4		Trochu
Fox, Alfred	Carbon	3 14		29 23 4		Carbon
Halbert Bros.	Trochu	8 14		33 23 4		Trochu
Inland Coal Co., Ltd.	Edmonton, 804 McLeod Bldg.	NE. ¼ 25		31 24 4		Three Hills
Knee Hill Coal Co., Ltd. (Pastorchik and Partners)	Calgary, 22 Travellers Bldg.	9 9		31 22 4		Ghost Pine Creek
Peerless Coal Co.	Carbon	2 15		29 23 4		Carbon
Pickering, B. (Orkney mine)	Ghost Pine Creek	2, 3 6		31 21 4		Ghost Pine Creek
Ryning, Jas. W.	Rowley	4 13		32 21 4		Rowley
Sarcee Coal Co., Ltd. (M. E. Morel, <i>et al.</i>)	Ghost Pine Creek	8 10		31 22 4		Ghost Pine Creek
Reissig, Erik	Trochu	W. ¼ 15 14		33 23 4		Trochu

CASCADE

Canmore Mines, Ltd., The.	Canmore	NE. ½ 1 29		24 10 5		Canmore
Wheatley & Sons, Frank.	Banff, Box 341	12 4		26 11 5		Banff (near Anthracite)

CASTOR

Ainsworth, J. H.	Halkirk	13 25		40 16 4		Halkirk
Annan, A., Annanson, H. O., and J. Radford	Donalda	5 28		41 17 4		Donalda
Battle River Coal Mine	Foreman	16 26		40 16 4		Foreman
(James Bradley)						
Bish Bros.	Forestburg	15 36		40 16 4		Hastings coulee
Bradley, J. and O'Brien, A.	Halkirk	14 25		40 16 4		Halkirk
Castor Coal and Construction Co.	Castor	3 to 6 3		38 14 4		Castor
Chiswick, James.	Gadsby	6, 11 28		39 16 4		Gadsby
Cordel, Jean F.	Halkirk	FL. 6, 7, 8 20		40 15 4		Halkirk
Davis & Gormley	Halkirk	10 8		39 15 4		Halkirk
Easton, James.	Castor	14 34		37 14 4		Castor
Glen Bank Coal Co. (Joe Tyrlik, Operator)	Heisler	9 28		42 17 4		Heisler
Hronek, Ben.	Halkirk, Box 144.	1 7		39 15 4		Halkirk
Johnson, C.	Forestburg	13 28		40 15 4		Forestburg

DIRECTORY OF FIRMS—Continued

Coal Mining Industry—Continued

ALBERTA—Continued

CASTOR—Concluded

Operator	Head office	Mine location			Mine office
		Section	Tp. R. W.		
		Part L. S. No.			
Jones, Wm.....	Forestburg.....	10 32	40 15 4	Forestburg	
Komperdo & Partners.....	Heisler.....	13 22	42 17 4	Heisler	
K. M. Coal Mine.....	Forestburg.....	16 2	41 16 4	Forestburg	
(Killam Mfg. Co., Ltd., Strome)					
Lien, Edwin A.....	Edberg.....	6 2	44 19 4	Edberg	
Marshall, John W.....	Donalda, R.R. 1.....	12 16	42 17 4	Donalda	
Mills & Sons, J. J.....	Heisler.....	5 22	42 17 4	Heisler	
Miner, A. T.....	Rosalind.....	4	43 17 4		
Mitchinson, Thomas.....	Donalda.....	10, 11 29	41 17 4	Donalda	
Muncy, Howard C.....	Foreman.....	15 26	40 16 4	Foreman	
Phillips, W. T. and W. J.....	Castor, Box 160.....	1, 2 4	38 14 4	Castor	
Remillard, O. V., <i>Operator</i>	Castor.....	15, 16 33	37 14 4	Castor	
Sorken, Alfred.....	Killam.....	16 26	40 16 4	Castor	
Strader & Bailey.....	Gadsby.....	11, 14 28	39 16 4	Gadsby	
Strader, Chas.....	Halkirk.....	4 17	39 15 4	Halkirk	
Strickland, Thos. and Partners.....	Heisler.....	1 33	42 17 4	Heisler	
Wiltse, Floyd N.....	Halkirk.....	W. $\frac{1}{2}$ 11, 12 39	39 15 4	Halkirk	
Wiltse & Krammer.....	Forestburg.....	8 32	40 15 4	Forestburg	

CHAMPION

McCaw, Albert M. S.	Champion	15	33	15 23 4	Champion
Popovich, Mike	Champion	9	8	16 23 4	Champion
Rhodes, Geo.	Champion	7	8	15 22 4	Champion

COALSPUR

Bryan Hard Coal Co., Ltd.	Edmonton, 309 Agency Bldg.	11	15	49 21 5	Robb (Mile 32)
Coal Valley Mining Co., Ltd.	Edmonton, 705 McLeod Bldg.	7	25	47 20 5	Coal Valley
Foothills Collieries, Ltd.	Winnipeg, 222 Portage Ave.	10	24	47 20 5	Foothills
Lakeside Coals Ltd. (Mine No. 2)	Edmonton, Jasper Ave. and 93rd St.	N. $\frac{1}{2}$ S. $\frac{1}{2}$	14 11	49 21 5	Robb
McLeod River Hard Coal Co. (1941) Ltd.	Nanaimo, B.C.	5	25	48 22 5	Mercoal
Sterling Collieries Co., Ltd.	Edmonton, 912 McLeod Bldg.	12	35	47 20 5	Sterco

CROWSNEST

Hillcrest Mohawk Collieries, Ltd.	Bellevue	SE. $\frac{1}{4}$	27	7 3 5	Bellevue
International Coal & Coke Co., Ltd.	Coleman		11 8	8 4 5	Coleman
McGillivray Creek Coal & Coke Co., Ltd.	Coleman	SW. $\frac{1}{4}$	2 17	8 5 5	Coleman
Neumann Bros.	Pincher Creek, Box 46.	5,	6 11	5 1 5	Pincher Creek
West Canadian Collieries, Ltd.	Blairmore		9 20	7 3 5	Bellevue
			10 2	8 4 5	Blairmore
			10, 11	31 6 3 5	Bellevue
			30		
Wood & V. Sulava	Beaver-Mines		10 3	6 2 5	Beaver Mines

DRUMHELLER

Aetna Coal Co.	East Coulee		1 22	28 19 4	Rosedale Ferry
Arcadia Coal Mines, Ltd.	Calgary, 405 Maclean Block		16 7	28 18 4	Willow Creek
(Sask. Fed. Co. Op's., Ltd.)					
Atlas Coal mine	Drumheller	13	21	27 18 4	East Coulee
Brilliant Coal Company	Drumheller	14	15	29 20 4	Drumheller
Chambers, H. S.	Delia	Fl.	22	28 18 4	Delia
			23		
Castle Coal Co., Ltd.	Wayne		16 7	28 19 4	Wayne
Commander Coal mine	Drumheller		5 9	29 20 4	Drumheller
Foye, E. B.	Drumheller, Box 734.		10 22	28 18 4	Willow Creek
Hamilton, John	Delia, Box 312.	xx	10 23	28 18 4	Delia
Hy-Grade Coal Mining Co., Ltd.	Drumheller, Box 200.		13 11	29 20 4	Drumheller (Midland road)
Ideal Coal Co., Ltd.	Wayne		16 1	28 20 4	Wayne
Kidd, Gordon L.	Drumheller, Box 230.		11 14	29 20 4	Drumheller

DIRECTORY OF FIRMS—Continued

Coal Mining Industry—Continued

ALBERTA—Continued

DRUMHELLER—Concluded

Operator	Head office	Mine location						Mine office
		Section			Tp. R. W.			
		Part L. S. No.						
Maple Leaf Minerals, Ltd.	Drumheller	13	32	27	18	4	Willow Creek	
Midland Coal Mining Co., Ltd.	Drumheller	10	9	29	20	4	Drumheller (Midland-vale)	
Minute Coal Co., The	Drumheller, Box 237	11						
Monarch Coal Mining Co., Ltd.	Calgary, 405-8th Ave. W.	8	14	29	20	4	Drumheller	
Murray Collieries, Ltd.	East Coulee	1	20	27	18	4	East Coulee	
Newcastle Collieries, Ltd.	East Coulee	1	29	27	18	4	East Coulee	
Red Deer Valley Coal Co., Ltd.	Drumheller	14	3	29	20	4	Drumheller	
	Drumheller, Box 20	NE. 1/4	7	29	20	4	Naomine (Drumheller)	
Regal Coal Co., Ltd.	Calgary, 808 Lancaster Bldg.							
Rosedale Collieries, Ltd.	Calgary, 909 Lancaster Bldg.	SE. 1/4	14	28	28	19	4	Rosedale Station
Sask. Fed. Co. Op's., Ltd.	East Coulee		27	28	18	4	Aerial	
Sovereign Coal Mine.	Wayne	NE. 1/4	2	32	27	18	4	East Coulee
(O'Dwyer & O'Dwyer)			8	8	28	19	4	Wayne
Western Gem & Jewel Collieries, Ltd.	Calgary, 606 Lancaster Bldg.	NW. 1/4	6	15	28	19	4	Cambria
Whittaker, O. W.	Beynon		5	6	27	20	4	Beynon

EDMONTON

Banner Coals, Ltd., <i>Operator</i>	Edmonton, 10631-92nd St.	10	8		55	24	4	Carbondale (Sturgeon Valley)
Beaver Hills Coal Co. (C. F. MacLachlan, <i>Operator</i>)	Edmonton, 10123-117th St.	8,	9	7	53	21	4	
Beverly Coal, Ltd.	Beverly	6	13		53	24	4	Beverly
Black Point Mine Co. (Dolinski, Yaniv & Maik)	South Edmonton, Box 4124	6	25		51	25	4	South Edmonton (Black Point)
Camarta, John, <i>Operator</i>	Cardiff	1	32		55	25	4	Cardiff
Chiarello, D., <i>Operator</i>	Legal	11	14	26	57	25	4	Legal
Dickinson Bros. & Knight	Carbondale	SE.	17		55	24	4	Carbondale
Edmonton Collieries, Ltd.	Edmonton, 10055-101st St.	14	36		54	25	4	Namao
Egg Lake Coal Co. (Thos. J. Logan, <i>Operator</i>)	Morinville, R.R. 2	NE. 1/4	36		56	26	4	Morinville
Great West Coal Co. Ltd., The	Edmonton, 10117-100A St.	SE. 1/4	10	7	53	23	4	Clover Bar
Gwilliam, George S.	Namao	3	6		55	24	4	Namao
Horkulak, A.	South Edmonton	15,	16	26	51	25	4	South Edmonton
Long Coal Co., Ltd.	Namao	3,	4	31	54	24	4	Namao
Mucha, J. C.	South Edmonton	13	25		51	25	4	South Edmonton
Nimko Mine	South Edmonton, Box 4035	10	25		51	25	4	South Edmonton
Ottewell Coal Co.	Clover Bar	SW. 1/2	17		53	23	4	Clover Bar
Pine Creek Coal Co. (Opalinski & Stephen Fridel)	South Edmonton, R.R. 3	4,	3	25	51	25	4	South Edmonton
Red Hot Coal Co., Ltd.	Edmonton, 10841-93rd St.	River lot	31		Edmonton Settlement			Forest Heights
Riverdale Coal Co., Ltd.	Edmonton, 10311 Sask. Drive	SW. 1/2	8		55	24	4	Namao
Samis Collieries	Namao	3,	4	36	54	25	4	Namao
Sinoski, Mike	South Edmonton, Box 4024	5,	6	25	51	25	4	Ellerslie
Starky Co., Ltd., J. B.	Edmonton, 10631-92nd St.	S. 1/2	35		55	25	4	Carbondale
Sundance Mines, Ltd.	Cardiff	16	23		55	25	4	Cardiff
White Star mine. (Waytowich & Senetchco)	Edmonton South, 11247- 90th St.	14	25		51	25	4	

GLEICHEN

Blackfoot Indian Agency	Gleichen	1,	12		21	21	4	Gleichen (on reserve, S. of Cluny)
Consumers Coal Co. (John Guiney & H. Rasmussen)	Rosebud, Box 34	3	29		26	21	4	Rosebud
Lucky Strike Coal Mine. (Alex McMillan, <i>Operator</i>)	Rosebud, Box 44	14	20		26	21	4	Rosebud
Schnepf, Karl J.	Rosebud	S. 1/2 5, N. 1/2 4,	29		26	21	4	Rosebud
Standard Coal Mine (Castella Bros.)	Standard	5	11		25	22	4	Standard

DIRECTORY OF FIRMS—Continued

Coal Mining Industry—Continued

ALBERTA—Continued

HALCOURT

Operator	Head office	Mine location				Mine office	
		Section		Tp.	R.		W.
		Part	L. S. No.				
Baldwin Collieries	Grande Prairie		15 35	70	7	6	Grande Prairie
Campbell, R. C., & M. O'Reilly	Dimsdale	N.W. ½	2 21	70	7	6	Dimsdale
Dahl & Cage	Halcourt		14 24	70	11	6	Halcourt
Fraser, Wm.	Halcourt		8 21	70	10	6	Hinton Trail (17 mi. SW. of Beaverlodge)
Grubb, C. D.	Huallen		1 18	70	9	6	Huallen
Johnston, Ralph O. & Sons	Grande Prairie			69	5	6	Grande Prairie, 25 mi. SE. of
Pinto Creek Coal Mines Ltd. (E. A. & W. E. Doupe, Operator)	Wembley			69	10	6	Wembley, 37 mi. SW. of
Schneider, Nikolaus	Dimsdale	4, 5	7	70	8	6	Dimsdale
Schultz, Thos. L.	Grande Prairie			70	7	6	Grande Prairie

HIGH PRAIRIE

Smoky River Coal Co. (Tissington & Shultz)	High Prairie.....	N. ½	5; 12 27	72	20	5	High Prairie
Triangle Mining Co., Ltd..... (Cyril T. Jones, <i>Operator</i>)	Edmonton, 10026-102nd Ave.	SW. ¼	8 28	72	20	5	High Prairie, 30 mi. W. of

HIGHWOOD

Allied Industrials, Ltd.....	Calgary, 303 Toronto General Trusts Bldg.	NE. ¼	15	19	7	5	Longview
Ford Highwood Collieries, Ltd.....	Toronto, Room 1701, Victory Bldg., 80 Richmond St. W.			17	6	5	Longview, 25 mi. W. of
E. P. Coal Mine (E. Payne).....	Turner Valley, c/o F. Nash		7 24	19	6	5	Lineham, .. mi. W. of
			14	18	6	5	Lineham, .. mi. W. of
				19	7	5	

LETHBRIDGE

Chester, J. C.....	Lethbridge, Box 5.....	9 30	9 21 4	Lethbridge
Forsyth Coal Co.....	Lethbridge, 2033-1st Ave. N.	5 8	7 21 4	Magrath
Hamilton Coal Co., J. J.....	Lethbridge, Box 140....	11 24	9 22 4	Lethbridge
Lethbridge Collieries, Ltd.....	Lethbridge, 207-7th St. S.	11 30	10 21 4	Shaughnessy
		3 2	9 22 4	Lethbridge
New Royal View Mine.....	Lethbridge, 635-13th St. N.	12 29	9 21 4	Lethbridge
Razzolini, Albert.....	Magrath, Box 180.....	3 7	7 21 4	Magrath
Rollingson Mine, Geo.....	Lethbridge, Box 432....	2 11	8 22 4	Lethbridge, 8 mi. SW.
Vulcan Mining & Construction Co..... (McArthur, Allen & Leon, <i>Operators</i>)	Lethbridge, 1117-2nd Ave. S.	3 7	7 21 4	Raymond

MILK RIVER

Duggan, F. W. and Pierce, E.....	Masinasin.....	10, 15 27	2 12 4	Masinasin (Kippen-ville)
Taylor, Thos., <i>Operator</i>	Groton.....	10 10	3 11 4	Groton, SW. of

MORLEY

Ainsley & Sons, B.....	Calgary, 5717-3rd St. SW.	25	25 7 5	Morley Sta., 2½ mi. SW. of
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DOMINION BUREAU OF STATISTICS

DIRECTORY OF FIRMS—Continued

Coal Mining Industry—Continued

ALBERTA—Continued

MOUNTAIN PARK

Operator	Head office	Mine location			Mine office	
		Section	Tp. T. W.			
		Part L. S. No.				
Cadomin Coal Co., Ltd.....	Cadomin.....	14 31	46 23 5	Cadomin		
Gregg River Collieries.....	Edmonton, 418 McLeod Bldg.	7, 8 28	47 24 5	Gregg River		
Luscar Coals, Ltd.....	Edmonton, 410 Tegler Bldg.	{ 7 23	47 24 5	Luscar		
Mountain Park Coals, Ltd.....	Edmonton, 410 Tegler Bldg.	24 32	47 24 5	Mountain Park		
King Coals, Ltd. (H. Croxton).....	Edmonton, 10226-116th St.	36	45 24 5	Cadomin		

NORDEGG

Brazeau Collieries Ltd.....	Nordegg.....	13 22	40 15 5		Nordegg
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PAKOWKI

Raeder, Wm.....	Elkwater.....	7, 10 23	8 3 4		Elkwater
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PEKISKO

Davies, G. C., <i>Operator and Lessee</i>	Priddis.....	10 4	22 3 5		Priddis
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PEMBINA

Donvie Collieries, Ltd.....	Wabamun.....	7 8 30	52 4 5		Stony Plain
Fry, N. and Larsen, T.....	Seba Beach.....	16 25	53 6 5		Seba Beach
Gainford Collieries.....	Gainford.....	SE. $\frac{1}{4}$ 36	53 6 5		Gainford
Hunt, Harold D.....	Gainford.....	SW. $\frac{1}{4}$ 31	53 5 5		Gainford
Lakeside Coals, Ltd.....	Edmonton, 93rd St. at Jasper	N. $\frac{1}{4}$ 16	53 4 5		Wabamun (N. of Lake Wabamun)
Lothian Collieries, Ltd.....	Wabamun.....				Wabamun
Pembina Collieries, Ltd. (G. Ostertay).....	Pembina.....	NW. $\frac{1}{4}$ 12	34 53 7 5		Pembina
Robinson, Wm.....	Entwistle.....	5 34	53 7 5		Entwistle
Schon, Karl.....	Moon Lake.....	9, 16 23	49 7 5		Moon Lake
Strawberry Creek Coal Co., Ltd.....	Warburg.....	13 24			
Wright, H. H.....	Genesee.....	6 11 13	49 3 5		Warburg
Yellowknife Transport Co., Ltd.....	Edmonton, 10509-100 Ave.	11 33	49 2 5		Genesee
		22	50 3 5		Genesee

PINCHER

Keith Coal Co., Albert.....	Lundbreck.....	SW. $\frac{1}{4}$ 15 26	7 2 5		Lundbreck
Mitchell, T.....	Lundbreck.....	10 26	7 2 5		Lundbreck

PRAIRIE CREEK

Jasper Coals, Ltd.....	Edmonton, 10117-100A St. (Box 475)	NE. $\frac{1}{4}$ 18	51 24 5		Drinnan
Ruby Glow Coal Mines.....	Hinton.....		51 25 5		Hinton
Woodley, C. M., & Partners.....	Hinton.....	4 29	50 25 5		Hinton

REDCLIFF

Cooke, C. R., & Naylor, C. A.....	Medicine Hat.....	2 5	13 6 4		Medicine Hat
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DIRECTORY OF FIRMS—Continued

Coal Mining Industry—Continued

ALBERTA—Concluded

ROCHESTER and WESTLOCK

Operator	Head office	Mine location				Mine office
		Section		Tp. R. W.		
		Part L. S. No.				
North Point Coal Co..... (Tomilson, Kaszuba & Dombroski, Operators)	Thorhild.....	1 11		60 21 4	Thorhild	
Pickardville Coal Co.....	Edmonton, 9732-110th St.	SW. $\frac{1}{4}$	5	59 26 4 58 27 4	Pickardville	
Thorhild Coal Co.....	Thorhild, Box 44.....	N. $\frac{1}{2}$ S. $\frac{1}{2}$	12 12 13	60 21 4	Thorhild	

SAUNDERS

Alexo Coal Co., Ltd.....	Alexo.....		9 27	40 13 5		Alexo (100 mi. W. of Red Deer)
Bighorn & Saunders Creek Collieries, Ltd.	Blairmore..... Saunders.....		9 24	40 13 5		Saunders

SHEERNES

Bordula, A. J., & Partners.....	Hanna.....		16 12	29 13 4		Sheerness
Chinook Coal Co., Ltd.....	Sheerness.....		1 12	29 13 4		Sheerness
Gaetz, C.....	Hanna, R.R. 3.....		1 6	29 14 4		Hanna, 13 mi. S. of (Gowans Coulee)
Ironside, T. G., & A. Glover.....	Scapa, R.R. 2.....		12 5	34 13 4		Scapa, 7 mi. E. of (Garden Plain)
Litke, Bros.....	Hanna, R.R. 1.....	SW. $\frac{1}{4}$	6 29	32 13 4		Hanna
Masciangelo, John.....	Delia, Box 178.....		10 21	30 17 4		Delia
Pahl & Sons, Fred M.....	Hanna, R.R. 1.....	SE. $\frac{1}{4}$	7 30	32 13 4		Hanna
Sheerness Coal Co., Ltd.....	Sheerness.....		4 15 9	29 12 4		Sheerness

TABER

Lavenne, Clement J..... (Acadia Coal Mines Ltd.)	Bow Island, Box 127....		3 27	12 10 4		Bow Island
McCracken, D., & Goring, H.....	Aldersen.....		28	12 10 4		Aldersen
Oliver Coal Mine, Lewis.....	Taber.....		2 18	10 16 4		Taber
Southern Alberta Coal Co.....	Calgary, 332-7th Ave. W.		7 8 26	9 13 4		Grassy Lake
			4 26	9 13 4		Grassy Lake
			30	10 16 4		Taber
			7 8 12	10 17 4		Taber

TOFIELD

Binder, Christopher.....	Ryley.....		5 9	49 17 4		Ryley
Black Nugget Coal Co. Ltd..... (Fred Irving, Operator)	Dodds.....		15 11	49 18 4		Dodds
Dodds Coal Mine..... (Skarin & Clarke, Operators)	Dodds.....		2 3 14	49 18 4		Dodds
Ryley Coal Co..... (Zacharchuk et al, Operators)	Ryley.....		8 8	49 17 4		Ryley
Tofield Coal Co., Ltd.....	Tofield, Box 141.....	N. $\frac{1}{2}$	26	50 19 4		Tofield

WETASKIWIN

Gill, Peter.....	Thorsby, R.R. 2.....		2 7 3	48 27 4		Thorsby
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WHITECOURT

Pritchard, R. F.....	Blue Ridge.....	N. $\frac{1}{4}$ S. $\frac{1}{4}$	16 30 1 31	59 10 5		Blue Ridge
Watson, Alex.....	Blue Ridge.....		12 13 19 9 16 24	59 10 5 59 11 5		Blue Ridge

DIRECTORY OF FIRMS—Continued

Coal Mining Industry—Concluded

BRITISH COLUMBIA

VANCOUVER ISLAND

Operator	Head office	Mine location	Mine office
Biggs, James.....	Nanaimo, 813 Douglas Rd.	Wellington.....	Nanaimo
Canadian Collieries (Dunsmuir), Ltd.....	Nanaimo.....	Cumberland.....	Cumberland, 1 mi. from Cumberland, 1 mi. NW.
		Cumberland.....	Bevan, Lake Trail Rd.
		Cranberry.....	S. Wellington, 7 mi. S. of
		Cranberry.....	Nanaimo, 14 mi. SW. of
		Wellington.....	Extension
		Wellington.....	Nanaimo
Carruthers & Wakelam..... (Wellington No. 3 mine)	Nanaimo, 160 Bastion St.; Box 68		
Chambers, Ralph H.....	Nanaimo, 86 Victoria Rd.; Box 29	Wellington.....	Nanaimo (Ext. No. 3)
Dunn, Andrew.....	Nanaimo, 307 Bruce Ave.	Wellington.....	Extension (Ext. No. 1)
Hamilton, Robt. N.....	Extension.....	Wellington.....	Extension
Lewis, Glyn and Jos. Wilson..... (Wellington No. 8 mine)	Nanaimo, 508 Rosehill Ave.	Cranberry.....	Timberlands
Loudon, Wm. D..... (Wellington No. 5 mine)	Nanaimo, 160 Bastion St.; Box 68	Wellington.....	Nanaimo
McKellar, Ross & Carroll..... (Cassidy Mines)	Nanaimo, 715 Nicol.....	Cranberry.....	Cassidy, 10 mi. S. of Nanaimo
Pacific Coal Mine, Wellington No. 9..... (H. Gerlock and F. John)	Nanaimo, 160 Bastion St.; Box 68	Wellington.....	Nanaimo
Stronach's Mine, C.....	Wellington.....	Wellington.....	Wellington

CROWSNEST

Hillcrest Mohawk Collieries, Ltd.....	Bellevue, Alberta.....	Corbin.....	Corbin, B.C.
Consolidated Mg. & Smelting Co. Ltd., The	Trail.....	Coal m't'n, portion of northerly half	Trail, B.C.
Crow's Nest Pass Coal Co. Ltd., The...	Fernie.....	Michel Creek.....	Fernie, 21 mi. NE. of

INLAND

British Lands, Ltd.....	Kelowna, Box 253.....	Finlay Creek.....	Princeton, 6 mi. SW. of
Taylor, James.....	Princeton.....	Princeton, 4 mi. W. of	Princeton, 2 mi. W. of
Tulameen Collieries, Ltd.....	Vancouver, 716 Hall Bldg.	Princeton.....	
Merritt Coal Mines, Ltd.....	Merritt.....	Nicola valley.....	Merritt, 2 mi. E. of
Coldwater Colliery..... (Gerrard, Berkley & Allan)	Merritt.....	Nicola valley.....	Merritt
Hat Creek Coal Mine..... (St. Eugene Mg. Corp., Operator)	Pavilion.....	Upper Hat Creek.....	Pavilion, 15 mi. E. of Ashcroft, 30 mi. NW. of
Hutton, F.....	Vancouver, 850 Hastings W.		Quesnel, 19 mi. S. of
Armstrong, Wm., & Robt. Day.....	Australian.....	Australian Creek.....	Quesnel, 25 mi. E. of
	Cottonwood.....	Lightning Creek.....	(Wingdam)
Donnelly, James J.....	Quesnel.....	Fraser River, east side.....	Quesnel, 7 mi. N. of
Cariboo Central Placers, Ltd.....	Cottonwood.....	Lightning Creek.....	
Hasler Creek Coal Co. Ltd.....	Dawson Creek.....	On Hasler Creek.....	Little Prairie, 18 mi. SW. of
Gething, Quentin F.....	Hudson Hope.....	Bullhead Mountain, east slope of	Hudson Hope, 12 mi. W. of
Peace River Coal Mines, Ltd.....	Victoria, 106 Union Bldg.	Bullhead Mountain, NW. slope of	Hudson Hope, 12½ mi. W. of
Bulkley Valley Collieries, Ltd..... (F. M. Dockrill, Lessee)	Telkwa, Box 3.....	On Goathorn Creek.....	Telkwa, 7½ mi. S. of
Telkwa Co., Ltd.....	Telkwa, Box 27.....		
	Telkwa, Box 27.....	Telkwa River.....	Telkwa, 6 mi. NE. of
Campbell, Ed. F.....	Vancouver, 1325-15th Ave. W.	Glacier Creek.....	Smithers, 4 mi. N. of
		Coal Creek, E.....	Quick Sta., 20 mi. NE. of

YUKON and NORTHWEST TERRITORIES

Five Fingers Coal Co.....	St. Paul, Minn., 713 New York Bldg.	Yukon.....	Carmacks
	Fort Norman, N.W.T....	N.W.T....	Norman, 20 mi. S. of

DIRECTORY OF FIRMS—Continued

Firms in the Natural Gas Industry

NOTE: (a) Drilling only.
 (b) Distributing only.
 (c) Drilling and producing.
 (d) Pipe line company.
 (e) Using or selling gas from absorption plant.

Name	Address	Location of field	
NEW BRUNSWICK—			
Moncton Electricity and Gas Co. Ltd. (b).	700 Main St., Moncton.....	Stoney Creek	
New Brunswick Gas & Oilfields Ltd.....	Box 194, Moncton.....		
ONTARIO—			
Achilles Oil & Gas Syndicate.....	67 Yonge St., Toronto.....	Senaca and Woodhouse	
Acme Gas Syndicate.....	Box 52, Ridgeway.....	Bertie	
Ajax Oil & Gas Co. Ltd.....	371 Bay St., Toronto.....	Dover, Tuscarora and Middleton	
Aloka Oil Co. Ltd.....	57 Queen St. W., Toronto.....	Dereham and Malahide	
Amer-Can Oil & Gas Co.....	215 King St. W., Chatham.....	Dover, Tilbury and Walpole	
Ashton, J. L. (a).....	Chatham.....	Bertie	
Barnhart, Mrs. E.....	Stevensville.....		
Bates, Norman.....	Humberstone.....	Humberstone	
Beachville Natural Gas Syndicate (b).....	Beachville.....	Walpole	
Beaver Oil & Gas Syndicate.....	67 Yonge St., Toronto.....		
Belmont Gas Co. (b).....	815 Lawrence Rd., Windsor.....	Walpole	
Benn, A. S.....	Hagersville.....		
Benner, K. W.....	Fisherville.....	Rainham and Walpole	
Benner & Tilley.....	Fisherville.....	Rainham and Walpole	
Bertie Township Gas & Oil Syndicate.....	Fisherville.....	Bertie and Willoughby	
Big Seven Gas Syndicate.....	Fisherville.....	Rainham	
Binbrook Gas Co.....	Binbrook.....	Binbrook	
Bliss, D. E.....	Tillsonburg.....	Middleton	
Brindley & Harper.....	Dunnville.....	Brantford	
Broadway Gas Syndicate.....	Cayuga.....	Walpole	
Buck, C. S.....	Port Rowan.....	South Walsingham	
Burchell Natural Gas & Oil Syndicate.....	R.R. 2, Listowel.....	Woodhouse	
Canada Cement Co. Ltd.....	Box 290, Montreal, Que.....	Wainfleet	
Canadian Natural Gas Syndicate.....	Simcoe.....	Bayham and Moulton	
Canfield Gas Syndicate.....	703 Capitol Park Bldg., Detroit, Mich., U.S.A.....	North Cayuga	
Canfield Natural Gas Co. Ltd.....	Dunnville.....	North Cayuga	
Cartwright, S. E.....	1972 Penobscot Bldg., Detroit, Mich., U.S.A.....	Walpole	
Central Pipe Line Co. Ltd. (c).....	Chatham.....	Bayham, Houghton and Malahide	
Central Senaca Gas Syndicate.....	Cayuga.....	Senaca	
City Gas Company of London (b).....	London.....	Walpole	
Colbert, C. T.....	26 Sun Life Bldg., Hamilton.....		
Coleman, J. A.....	Wellandport.....	Gainsborough	
Columbia Natural Gas & Oil Co.....	907 Pigott Bldg., Hamilton.....	Dunn	
Coronation Gas Syndicate.....	Stevensville.....	Bertie	
Crowland Gas Syndicate.....	R.R. 4, Welland.....	Crowland	
Culver, M. & Son (a).....	R.R. 2, Selkirk.....	Humberstone and Bertie	
Culver & Havill (a).....	Stevensville.....		
Dain City Gas Syndicate.....	208 Burgar St., Welland.....	Tilbury East	
Dawson, Ralph.....	Merlin.....	Middleton	
Dean Gas Syndicate.....	Fisherville.....	Windham	
Delhi Gas Syndicate.....	Cayuga.....	Binbrook, Caistor, Canboro, Charlotteville, Delhi Village, Dunn, Glanford, Humberstone, Malahide, Mersea, Middleton, Moulton, North Cayuga, North Dorchester, North Walsingham, Oneida, Onondaga, Port Dover Village, Port Rowan, Rainham, Raleigh, Romney, Senaca, Sherbrooke, South Cayuga, South Norwich, South Walsingham, Southwold, Tilbury East, Townsend, Wainfleet, Walpole, West Oxford, Windham, Woodhouse and Yarmouth	
Dempster & James (a).....	Selkirk.....		
Dennis, Gordon (a).....	Selkirk.....		
Dominion Natural Gas Co. Ltd.....	220 Delaware Ave., Buffalo 2, N.Y., U.S.A.....		
Dorset Oil & Gas Syndicate.....	67 Yonge St., Toronto.....		Cayuga South
Dunn Natural Gas Co. Ltd., c/o Long & Marshall.....	Pigott Bldg., Hamilton.....		Dunn
Dunnville-Detroit Gas Syndicate.....	703 Capitol Park Bldg., Detroit, Mich., U.S.A.....		North Cayuga
Economy Natural Gas Syndicate.....	25 Market Place, Stratford.....		Woodhouse
Elgin Prospecting Syndicate.....	Ridgeway.....		Humberstone
Elk Development Syndicate (c).....	South Cayuga.....		Humberstone
Emerson, Harry L. (c).....	Dunnville.....	Canboro, Moulton and Wainfleet	
Emerson, Lloyd (a).....	Wainfleet.....	Wainfleet	
Emerson & Rose (a).....	Wainfleet.....		

DIRECTORY OF FIRMS—Continued

Firms in the Natural Gas Industry—Continued

Name	Address	Location of field
ONTARIO—Continued		
Erie Prospecting Syndicate.....	18 Toronto St., Toronto.....	Walpole
Evans, H. L. & Sons (a).....	Tillsonburg.....	Enniskillen
Fairbanks, C. O.....	Petrolia.....	Oneida
Featherstone, Roy.....	Caledonia.....	Rainham
Fisherville Gas Co.....	Fisherville.....	Bertie
Fleet Aircraft Ltd.....	Fort Erie.....	Binbrook
Fletcher, Eva.....	Glanford Station.....	Bertie
Fonthill-Ridgeville Gas Co. Ltd. (b).....	Box 511, Portland, Ind., U.S.A.....	
Frontier Gas Syndicate.....	Fisherville.....	
Garinger Wm. (a).....	Dunnville.....	
Gas Producers Co.....	703 Capitol Park Bldg., Detroit, Mich., U.S.A.....	
Gifford, Arthur & Son.....	R. R. 2, Cayuga.....	Raleigh
Glenney, Elizabeth A.....	Dunnville.....	South Cayuga
Grand River Gas & Oil Syndicate.....	Canfield.....	Canboro
Grimsby Natural Gas Co. Ltd.....	Grimsby.....	Cayuga North
Hagersville Quarries Ltd.....	Hagersville.....	Caistor, Canboro and Gainsboro
Haldimand Gas Syndicate.....	Cayuga.....	Walpole
Haldimand Natural Gas Syndicate.....	Stevensville.....	Rainham
Harris, Wm. (a).....	Jarvis.....	Bertie
Highbank Oil Ltd.....	Chatham.....	Raleigh
Hodgson, Ray (a).....	Dunnville.....	
Hoover, A. E. (a).....	Selkirk.....	
Hoover & Donald (a).....	Selkirk.....	
Houk Syndicate.....	Dunnville.....	Moulton
House, C. C. (c).....	Stevensville.....	Bertie
Ideal Gas Syndicate.....	Fisherville.....	Rainham
Irving, Don (a).....	Dunnville.....	
Ivy Drilling Co. (a).....	Ivy.....	
Jackson & Graft Syndicate.....	Dunnville.....	Crowland
Jackson, P. L. (c).....	Dunnville.....	Canboro, Moulton, North Cayuga, Walpole and Crowland
Jasperson, Bon.....	Kingsville.....	Gosfield South and Romney
Jenkins, S. S.....	208 W. North St., Buffalo, N.Y., U.S.A.....	Bertie and Townsend
Kent Gas Syndicate.....	36 Toronto St., Toronto.....	Walpole
Kerr, Robert.....	York.....	Senaca
Kiff, Harry B.....	Leamington.....	Mersea
Kiser Bros. (a).....	Chatham.....	Rainham
Lake Erie Gas Syndicate.....	54 Hambly Ave., Toronto.....	Bertie
Lake Shore Gas & Oil Syndicate.....	Ridgeway.....	
Leamington, Town of (b).....	Leamington.....	
Lincoln Gas Co.....	Dunnville.....	Canboro, Moulton, Caistor, Gainsboro and Wainfleet
Little, R. W.....	222 Humbercrest Blvd., Toronto.....	Walpole, Rainham, Onondaga and Brant
Locators Oils Ltd.....	22 King St. W., Toronto.....	Cayuga South and Middleton
Lomac Gas & Oil Co.....	Port Stanley.....	Bayham
Lunefeld, Samuel.....	Drawer 200, Fort Erie N.....	Bertie
Lymburner Bros. & Webber (c).....	Dunnville.....	North Cayuga, Rainham and Walpole
Mandley, Roy (a).....	Dunnville.....	
Maple Leaf Gas Syndicate.....	Ridgeway.....	Bertie and Crowland
McCutcheon, T. J. (a).....	Dunnville.....	
McDougal, Seymour.....	279 St. George St., Toronto.....	Rainham
McKechnie, Sam (c).....	Dunnville.....	Walpole, Senaca and Bayham
McKillop, Wm. (a).....	Box 102, Hamilton.....	
McLister, J. J. (a).....	Dunnville.....	
Mehlenbacher, L. B. Gas Syndicate.....	Cayuga.....	Walpole and North Cayuga
Midfield Gas Corp. Ltd.....	609, 68 Yonge St., Toronto.....	North Cayuga and Oneida
Minor & Luck.....	Dunnville.....	Sherbrooke
Mohawk Gas & Oil Syndicate Ltd.....	421 Main St. E., Hamilton.....	Canboro, Oneida and Walpole
Monarch Gas & Oil Syndicate.....	Fisherville.....	Walpole, Dunn and South Cayuga
Morningstar, Roy Gas Well.....	Ridgeway.....	Bertie
Mott, George L. & Associates (c).....	Lynden.....	Beverly
Nagel, Elmer (a).....	Stevensville.....	
Nauman Bros. (a).....	Dunnville.....	
Nauman & Swayze (a).....	Selkirk.....	
Nelles Corners Gas Co.....	Nelles Corners.....	Rainham and North Cayuga
New Tillsonburg Oil & Gas Co. Ltd.....	26 Adelaide St. W., Toronto.....	Middleton
Niagara Gas Syndicate.....	Fisherville.....	Bertie
Niagara Natural Gas Co. Ltd.....	24 Jarvis St., Fort Erie North.....	Moulton
Niece, Elmond.....	Box 437, Dunnville.....	Sherbrooke
Norotto Gas Co. Ltd. (b).....	Norwich.....	
North Cayuga Gas Syndicate.....	Cayuga.....	North Cayuga
North Shore Gas Co.....	Selkirk.....	Rainham
Noyes, L. A.....	Stevensville.....	Willoughby
Oil Springs Oil & Gas Co. Ltd. (b).....	Oil Springs.....	
Oxford Pipe Line Co. (d).....	100 Adelaide St. W., Toronto.....	
Palso, John (b).....	Wainfleet.....	
Patterson & Culver (c).....	Dunnville.....	Oneida
Patterson, W. C. Gas Co. Ltd. (c).....	Box 914, Jamestown, N.Y., U.S.A.....	Dunn, Rainham, Walpole, North Cayuga, Wainfleet, Willoughby, Crowland, Humberstone, Bayham and Dereham

DIRECTORY OF FIRMS—Continued

Firms in the Natural Gas Industry—Continued

Name	Address	Location of field
ONTARIO—Concluded		
Peacock Point Gas & Oil Syndicate.....	Fisherville.....	Walpole
Perkins, J. E. (a).....	Dunnville.....	Dover, Oneida, Onondaga and Tuscarora
Petrol Oil & Gas Co. Ltd.....	414 Bay St., Toronto.....	Bayham
Pine Ridge Gas Co.....	Port Stanley.....	Onondaga, Oneida, Seneca and North Cayuga
Port Colborne-Welland Gas Co. (c).....	Port Colborne.....	Canboro
Povee Gas Syndicate.....	Tillsonburg.....	Dover
Prairie Gas & Oil Co. Ltd.....	350 Bay St., Toronto 1.....	Humberstone, Willoughby, Bertie and Crowland
Provincial Gas Co. Ltd.....	Port Erie N.....	Humberstone
Purcifer & Ferguson.....	Stevensville.....	South Walsingham, Oneida and Rainham
Queenston Gas & Oil Co. Ltd.....	Ridgeway.....	Rainham
Rainham Gas Syndicate.....	Cayuga.....	Walpole
Reicheld, F. W.....	Jarvis.....	Walpole
Rieker, Arthur (c).....	Canboro.....	Canboro
Rocks Mills Gas & Oil Syndicate.....	510 Huron & Erie Bldg., London.....	South Norwich
Romney Oil & Gas Co.....	18 Toronto St., Toronto.....	Wainfleet
Roth, Frank.....	Ridgeway.....	Bertie
Roth, Harvey (a).....	Dunnville.....	Dover, Raleigh and Bayham
Rowe, E. P. Estate.....	350 Bay St., Toronto 1.....	Bertie
Royal Gas Syndicate.....	Stevensville.....	Tilbury East
Salina Gas Co. Ltd.....	317 Queen St., Chatham.....	Walpole
Sandusk Gas Syndicate.....	Fisherville.....	Enniskillen
Sarnia Oil & Gas Co. Ltd.....	204 Atlas Bldg., Toronto.....	
Shank Bros. (a).....	Rainham Centre.....	
Shaw, Sylvester (a).....	Chatham.....	
Sherk & Carrothers.....	Sherkston.....	Humberstone
Sherk & Learn.....	Sherkston.....	Humberstone
Sherk & Nagel.....	Stevensville.....	Bertie
Sherk, Perry M.....	Sherkston.....	Humberstone
Shurr & Shank.....	R. R. 2, Selkirk.....	Oneida and Rainham
Sider, Andrew & Jesse.....	Stevensville.....	Bertie
Sider, Norman.....	Sherkston.....	Humberstone
Smith & Ehde.....	Lowbanks.....	Moulton
Smith, Harry B.....	373 Oak Ave., Windsor.....	Romney and Tilbury East
South Norwich Gas & Oil Syndicate.....	Norwich.....	South Norwich
Springvale Gas & Oil Co. Ltd.....	Hagersville.....	Walpole
Standard Gas & Oil Syndicate.....	Fisherville.....	Rainham and Walpole
Stanley, W. E. Gas Syndicate.....	922 Millwood Rd., Toronto.....	Rainham and Walpole
Star Gas Syndicate.....	Ridgeway.....	Bertie
Sterling Gas Co.....	5 Quebec St., Guelph.....	Walpole
Stevensville Natural Gas & Fuel Co.....	Stevensville.....	Bertie
Stewart & Stewart.....	Jarvis.....	Walpole
Stewart, Elgin (c).....	Jarvis.....	Walpole
Storm & Stewart.....	Jarvis.....	Humberstone
Stover & Rawlings (c).....	Chatham.....	Dover and Raleigh
Stronwell Syndicate.....	Tillsonburg.....	Moulton
Stubble, H. H. (a).....	Chatham.....	
Sundy Gas Wells.....	Dunnville.....	Canboro
Superior Gas Syndicate.....	Fisherville.....	Rainham
Sweets Corners Gas Syndicate.....	Fisherville.....	Rainham
Swent, Wm. (a).....	Rainham Centre.....	
Tanner, F. O.....	135 General Motors Bldg., Detroit, Mich., U.S.A.....	North Cayuga and Oneida
Till Gas Syndicate.....	Tillsonburg.....	Walpole
Union Gas Company of Canada Ltd.....	Chatham.....	Romney, Tilbury East, Raleigh, Dover, Dawn, Camden Gore, Zone, Mosa, Aldborough, Euphemia, Dunn, North Cayuga, Seneca, South Cayuga, Walpole, Oneida, Chatham and Malahide
United Gas & Fuel Company of Hamilton Ltd. (b).....	82-84 King St. E., Hamilton.....	
Victoria Gas Co.....	Dunnville.....	Rainham and Walpole
Victory Oil & Gas Co.....	510 Huron & Erie Bldg., London.....	Windham
Wainfleet Gas Co. Ltd.....	Box 914, Jamestown, N. Y., U.S.A.....	Wainfleet
Walpole Gas Syndicate.....	Cayuga.....	Walpole, North Cayuga, Seneca and Walsingham South
Walter Gas Syndicate (c).....	Simcoe.....	South Walsingham, Townsend, Walpole and Woodhouse
Warren, Gordon (a).....	R.R. 1, Canboro.....	
Welland County Gas Syndicate.....	Stevensville.....	Bertie
Wentworth Gas Co. Ltd. (b).....	82-84 King St. E., Hamilton.....	
Werner, D. (a).....	Dunnville.....	Romney
West Petroleum Ltd.....	Sterling Tower Bldg., Toronto.....	
Western Ontario Natural Gas Co. Ltd., c/o Long & Marshall.....	Pigott Bldg., Hamilton.....	North Cayuga, Canboro and Dawn
Willoughby Gas Syndicate.....	R.R. 1, Chippawa.....	Humberstone
Wood, Ray.....	61 Inches Ave., Chatham.....	Townsend

DIRECTORY OF FIRMS—Continued

Firms in the Natural Gas Industry—Concluded

Name	Address	Location of field
SASKATCHEWAN—		
Bata Petroleum Ltd.	310 Broder Bldg., Regina	Unity
Lloydminster Gas Co. Ltd.	Lloydminster	Lloydminster
Northern Utilities Ltd.	Box 27, Lloydminster	Lloydminster
Triangle Gas & Oil Co. Ltd.	302 Kerr Blk., Regina	Lloydminster
Western Petroleum Ltd.	Kamsack	Kamsack
ALBERTA—		
Ace Royalties Ltd.	4 Clarence Blk. 122-8th Ave. W., Calgary	Turner Valley
Alberta Clay Products Co. Ltd.	Box 672, Medicine Hat	Medicine Hat
Alberta Pacific Royalties Ltd.	201 Lancaster Bldg., Calgary	Turner Valley
Allied Royalties Ltd.	201 Lancaster Bldg., Calgary	Turner Valley
Amalgamated Oils Ltd.	900 Lancaster Bldg., Calgary	Turner Valley
Anglo Canadian Oil Co. Ltd.	900 Lancaster Bldg., Calgary	Turner Valley
Argus Royalties Ltd.	900 Lancaster Bldg., Calgary	Turner Valley
Arrow Oil Royalties Ltd.	804 Southam Bldg., Calgary	Turner Valley
Associated Oil & Gas Co. Ltd.	200 Leeson-Lineham Bldg., Calgary	Turner Valley
Baltac Oils Ltd.	200 Leeson-Lineham Bldg., Calgary	Turner Valley
Barsac Royalties Ltd.	303 Toronto General Trusts Bldg., Calgary	Turner Valley
Bow Island, Town of (b)	Bow Island	
British American Oil Co. Ltd. (e)	Royal Bank Bldg., King and Yonge Sts., Toronto, Ont.	
British Colonial Oils Ltd.	1010 Lancaster Bldg., Calgary	Turner Valley
Calgary Power Co. Ltd.	244 St. James St., Montreal, Que.	Bassano
California Standard Co.	700 Lancaster Bldg., Calgary	Conrad and Princess
Calmont Oils Ltd.	303 Toronto General Trusts Bldg., Calgary	Turner Valley
Canadian Pacific Railway Co.	Medicine Hat	Medicine Hat
Canadian Western Natural Gas, Light, Heat & Power Co. Ltd.	215-6th Ave. W., Calgary	Brooks
Canadian Western Power & Fuel Co. Ltd.	Third St., Redcliff	Redcliff
Chinook Oils Ltd.	232 Loughheed Bldg., Calgary	Turner Valley
Coastal Oils Ltd.	232 Loughheed Bldg., Calgary	Turner Valley
D. & D. Royalties Ltd.	303 Toronto General Trusts Bldg., Calgary	Turner Valley
Davies Petroleum Ltd. (N.P.L.)	409 Lancaster Bldg., Calgary	Turner Valley
Deep Oils Ltd.	501 Leeson-Lineham Bldg., Calgary	Turner Valley
Department of National Defence.	Traders Bldg., Calgary	Suffield
Director Royalties Ltd.	119 Sixth Ave. W., Calgary	Turner Valley
Dominion Glass Co. Ltd.	1111 Beaver Hall Hill, Montreal, Quebec.	Redcliff
Drillers & Producers Ltd.	203 Wilson Electric Bldg., Calgary	Turner Valley
East Crest Oil Co. Ltd.	212 Grain Exchange Bldg., Calgary	Turner Valley
Extension Oil Royalties Ltd.	900 Lancaster Bldg., Calgary	Turner Valley
Foothills Oil & Gas Co. Ltd.	604-606 Second St. W., Calgary	Turner Valley
Franco Oils Ltd.	Vermilion	Vermilion
Gas & Oil Refineries Ltd. (e)	301 Lancaster Bldg., Calgary	
Gunderson Brick & Coal Co. Ltd.	Redcliff	Redcliff
Home Oil Co. Ltd.	226 Loughheed Bldg., Calgary	Turner Valley
Hudson's Bay Oil & Gas Co. Ltd.	79 Main St., Winnipeg, Man.	Viking
Inland Gas & Oil Co. Ltd.	36 Dominion Bank Chambers, Edmonton.	Fabyan
Major Oil Investments Ltd.	407 Lancaster Bldg., Calgary	Turner Valley
Maple Leaf Milling Co. Ltd.	Dominion Bank Bldg., Toronto, Ont.	Medicine Hat
Maple Leaf Oil Co. Ltd.	608 Stock Exchange Bldg., Vancouver, B.C.	Wainwright
Medicine Hat Brick & Tile Co. Ltd.	Box 100, Medicine Hat	Medicine Hat
Medicine Hat, City of.	Medicine Hat	Medicine Hat
Model Oils Ltd.	201 Lancaster Bldg., Calgary	Turner Valley
Northwestern Utilities Ltd.	10124-104th St., Edmonton	Viking and Kinsella
Ogilvie Flour Mills Co. Ltd.	Medicine Hat	Medicine Hat
Oil Ventures Ltd.	501 Leeson-Lineham Bldg., Calgary	Turner Valley
Pacific Petroleum Ltd. (N.P.L.)	501 Leeson-Lineham Bldg., Calgary	Turner Valley
Redcliff Pressed Brick Co. Ltd.	Redcliff	Redcliff
Royalite Oil Co. Ltd.	119 Sixth Ave. W., Calgary	Turner Valley
Shell Oil Company of Canada Ltd.	25 Adelaide St. E., Toronto, Ont.	Jumping Pound
Southwest Petroleum Co. Ltd.	604-606 Second St. W., Calgary	Turner Valley
Suffield Gas Supply	Suffield	Suffield
Sunset Oils Ltd.	302 Toronto General Trusts Bldg., Calgary	Turner Valley
Twin Valley Oil Royalties Ltd.	804 Southam Bldg., Calgary	Turner Valley
Valley Gas Co. Ltd.	Turner Valley	Turner Valley
Vulcan-Brown Petroleum Ltd.	232 Loughheed Bldg., Calgary	Turner Valley
Wainwright Gas Co. Ltd.	36 Dominion Bank Chambers, Edmonton.	Fabyan
Wetaskiwin, City of.	Wetaskiwin	Wetaskiwin
York Oils Ltd.	414 Pacific Bldg., Hastings St. W., Vancouver, B.C.	Turner Valley
NORTHWEST TERRITORIES—		
Imperial Oil Co. Ltd.	56 Church St., Toronto, Ont.	Fort Norman

DIRECTORY OF FIRMS—Continued

Crude Oil Producers

Name	Address	Location of Field
NEW BRUNSWICK—		
New Brunswick Gas & Oilfields Ltd.....	Moncton.....	Stoney Creek
ONTARIO (*)—		
Barnes, Amos.....	Box 552, Petrolia.....	Petrolia and Enniskillen
Barnes, Henry.....	Oil Springs.....	Petrolia and Enniskillen
Beattie, James and John.....	Glencoe.....	Warwick
Byers Bros.....	Oil Springs.....	Petrolia and Enniskillen
Canadian Oil Companies Ltd.....	Terminal Building, Toronto 2.....	Petrolia and Enniskillen
Chandler, H. & C.....	829 East D. St., Iron Mountain, Mich., U.S.A.....	Petrolia and Enniskillen
Cole, W. J.....	Box 91, Petrolia.....	Petrolia and Enniskillen
Collins, Matt.....	Box 114, Petrolia.....	Petrolia and Enniskillen
Corey Oil & Supply Co.....	Petrolia.....	Petrolia and Enniskillen
Dennis, Mrs. Levina.....	Oil Springs.....	Oil Springs
Domestic Gas and Oil Co. Ltd.....	Blyth.....	Bothwell
Dominion Petroleum Co. Ltd. (b).....	Glencoe.....	Mosa
Donald, George.....	Oil Springs.....	Petrolia and Enniskillen
Duncan, Mrs. E.....	Petrolia.....	Petrolia and Enniskillen
Dutton Oil & Gas Ltd.....	170 Bay St., Toronto 1.....	Dunwich
Earl & Dolphin (a).....	Kerwood.....	.....
Earl, Sydney (b).....	R. R. 2, Kerwood.....	Metcalfe
Edward, F. H.....	Petrolia.....	Petrolia and Enniskillen
Evans, H. L. & Sons (a).....	Tillsonburg.....	.....
Fairbank, John H. (Estate of).....	Petrolia.....	Petrolia and Enniskillen
Fitzpatrick, P. H. (Estate of).....	2230 Park Ave., Detroit, Mich., U.S.A.....	Orford
Garinger, Arthur.....	Oil Springs.....	Petrolia and Enniskillen
Graff, George I.....	25 Market Place, Stratford.....	Zone
High Grade Natural Gas Co. Ltd.....	215 King St. W., Chatham.....	Dover
Holmes, E. B.....	Bothwell.....	Zone
Howlett, Fred W. & Sons Ltd.....	Petrolia.....	Petrolia and Enniskillen
Irwin, F. J.....	Petrolia.....	Petrolia and Enniskillen
Kells, E. E.....	Petrolia.....	Petrolia and Enniskillen
Kelly, J. E.....	Petrolia.....	Petrolia and Enniskillen
Kerr, J. & J. Co. Ltd.....	Petrolia.....	Petrolia and Enniskillen
Lather, Arthur.....	R. R. 3, Bothwell.....	Orford
Lennan, Lloyd A.....	Box 514, Petrolia.....	Petrolia and Enniskillen
Levertown, Wm.....	Bothwell.....	Zone
Lewis, Laura and William.....	Oil Springs.....	Petrolia and Enniskillen
MacGillivray, Mrs. Margaret.....	Oil Springs.....	Petrolia and Enniskillen
Marcus, Andrew.....	Bothwell.....	Zone
McCrie, R. D.....	Bothwell.....	Zone
McCutcheon, A. P.....	Oil Springs.....	Petrolia and Enniskillen
McGill, Joseph.....	Bothwell.....	Bothwell
McMillan, D. C.....	R. R. 3, Bothwell.....	Zone
McMillan & Warwick.....	Bothwell.....	Orford
McPherson, Ross (a).....	851 Tuscarora St., Windsor.....	.....
Mitchell, Charles.....	Oil Springs.....	Petrolia and Enniskillen
Mitchell, R.....	Oil Springs.....	Petrolia and Enniskillen
Morningstar, George E.....	Oil Springs.....	Petrolia and Enniskillen
Morningstar, H. M.....	Oil Springs.....	Petrolia and Enniskillen
Ontario Lands & Oil Co. Ltd.....	Petrolia.....	Petrolia and Enniskillen
Petrol Oil and Gas Co. Ltd.....	414 Bay St., Toronto.....	Dover West
Pope, H. O.....	Bothwell.....	Zone
Pope, Wm. Jr.....	Bothwell.....	Zone
Prairie Gas & Oil Co. Ltd.....	350 Bay St., Toronto 1.....	Dover East
Rowe, E. P., Estate of.....	350 Bay St., Toronto 1.....	Dover and Raleigh
Saroline Oil Co.....	Petrolia.....	Petrolia and Enniskillen
Shain, Viola M.....	R. R. 3, Petrolia.....	Petrolia and Enniskillen
Shaw Bros. (a).....	Tharaville.....	.....
Slack, C. M.....	Petrolia.....	Petrolia and Enniskillen
Stanley & McCrie.....	Bothwell.....	Camden
Stover & Rawlings (a).....	19 Beatty St., Chatham.....	.....
Sutherland, B. M.....	Petrolia.....	Petrolia and Enniskillen
Thompson, Arnold.....	Box 326, Petrolia.....	Petrolia and Enniskillen
Tunks, James.....	Bothwell.....	Zone
Union Gas Co. of Canada Limited.....	Gas Bldg., Chatham.....	Dawn and Zone
Warwick, Joseph.....	Oil Springs.....	Petrolia and Enniskillen
Wilson-Sullivan Development Co. (b).....	112 S. Christina St., Sarnia.....	Adelaide, Brooke and Warwick
Winderover, Wm. (a).....	R. R. 2, Sarnia.....	.....
Winnett, J. W. G.....	4183 Talbot St., London.....	Mosa, Zone and Orford
Woodward, Wm.....	Box 103, Oil Springs.....	Petrolia and Enniskillen
Yerks, Frank.....	Box 641, Petrolia.....	Warwick, Petrolia and Enniskillen
SASKATCHEWAN—		
Community Services Petroleum Syndicate.....	Miller Block, North Battleford.....	Lloydminster
National Petroleum Syndicate.....	Kerr Block, Regina.....	Lloydminster
S. A. C. Oils, Ltd.....	720-475 Howe St., Vancouver, B.C.....	Lloydminster

(*) Producers of 300 barrels or more during the year.

(a) Driller only.

(b) Producer and driller.

DIRECTORY OF FIRMS—Continued

Crude Oil Producers—Continued

Name	Address	Location of field
ALBERTA—		
Ace Royalties Ltd.	4 Clarence Block, 122-8th Ave. W., Calgary	Turner Valley
Alberta Oil Incomes Ltd.	301 Lancaster Bldg., Calgary	Turner Valley
Alberta Pacific Royalties Ltd.	201 Lancaster Bldg., Calgary	Turner Valley
Allied Royalties Ltd.	201 Lancaster Bldg., Calgary	Turner Valley
Amalgamated Oils Ltd.	900 Lancaster Bldg., Calgary	Turner Valley
Anglo Canadian Oil Co. Ltd.	900 Lancaster Bldg., Calgary	Turner Valley
Argus Royalties Ltd.	900 Lancaster Bldg., Calgary	Turner Valley
Arrow Oil Royalties Ltd.	804 Southam Bldg., Calgary	Turner Valley
Associated Oil & Gas Co. Ltd.	200 Leeson-Lineham Bldg., Calgary	Turner Valley
Baltac Oils Ltd.	200 Leeson-Lineham Bldg., Calgary	Turner Valley
Barsac Royalties Ltd.	303 Toronto General Trusts Bldg., Calgary	Turner Valley
Bethwain Oils Ltd.	239 Wilson Bldg., 73 Adelaide St., Toronto, Ont.	Wainwright
Borradaile Oils Ltd.	Suite 1602, 330 Bay St., Toronto, Ont.	Vermilion
British American Oil Co. Ltd. (b)	Royal Bank Bldg., King & Yonge Sts., Toronto, Ont.	
British Colonial Oils Ltd.	1010 Lancaster Bldg., Calgary	Turner Valley
British Dominion Oil & Development Corp. Ltd.	213-216 Dominion Bank Bldg., Calgary	Turner Valley
British Empire Oil & Development Co. Ltd.	401 Leeson-Lineham Bldg., Calgary	Turner Valley
California Standard Co.	700 Lancaster Bldg., Calgary	Conrad and Princess
Calmont Oils Ltd.	303 Toronto General Trusts Bldg., Calgary	Turner Valley
Calwin Royalties Ltd.	301 Lancaster Bldg., Calgary	Turner Valley
Cannar Oils Ltd.	360 McGill St., Montreal, Que.	Vermilion
Century Royalties Ltd.	102 Bank of Commerce Bldg., Calgary	Turner Valley
Chinook Oils Ltd.	232 Lougheed Bldg., Calgary	Turner Valley
Clonmel Petroleums Ltd.	330 Bay St., Toronto, Ont.	Turner Valley
Coastal Oils Ltd.	232 Lougheed Bldg., Calgary	Turner Valley
Command Oils Ltd.	4 Clarence Bldg., 122-8th Ave. W., Calgary	Turner Valley
Comm Oil Ltd.	4 Clarence Bldg., 122-8th Ave. W., Calgary	Turner Valley
Commonwealth Drilling Co. Ltd. (a)	4 Clarence Bldg., 122-8th Ave. W., Calgary	
Conestoga Resources Ltd.	710 Excelsior Life Bldg., Toronto, Ont.	Vermilion
Crest Royalties Ltd.	201 Lancaster Bldg., Calgary	Turner Valley
Crude Oils Ltd.	501 Leeson-Lineham Bldg., Calgary	Turner Valley
D. & D. Royalties Ltd.	303 Toronto General Trusts Bldg., Calgary	Turner Valley
Dalhousie Oil Co. Ltd.	Room 301, 119 Sixth Ave. W., Calgary	Turner Valley
Davies Petroleum Ltd. (N.P.L.)	409 Lancaster Bldg., Calgary	Turner Valley
Deep Oils Ltd.	501 Leeson-Lineham Bldg., Calgary	Turner Valley
Director Royalties Ltd.	Room 301, 119 Sixth Ave. W., Calgary	Turner Valley
Drillers & Producers Ltd.	203 Wilson Electric Bldg., Calgary	Turner Valley
East Crest Oil Co. Ltd.	212 Grain Exchange Bldg., Calgary	Turner Valley
Edmonton Wainwright Oils Ltd.	3 McDougal Court, Edmonton	Wainwright
Empire Petroleums Ltd.	501 Leeson-Lineham Bldg., Calgary	Princess
Extension Oil Royalties Ltd.	900 Lancaster Bldg., Calgary	Turner Valley
Federated Petroleums Ltd.	232 Lougheed Bldg., Calgary	Turner Valley
Foothills Oil & Gas Co. Ltd.	604-606 Second St. W., Calgary	Turner Valley
Four Star Petroleums Ltd.	232 Lougheed Bldg., Calgary	Turner Valley
Franco Oils Ltd.	Vermilion	Vermilion
Gas & Oil Refineries Ltd. (b)	301 Lancaster Bldg., Calgary	
Gem Royalties Ltd.	403 Lancaster Bldg., Calgary	Turner Valley
General Petroleums Ltd.	509-8th Ave. W., Calgary	Lloydminster
Grand Prairie Petroleums Ltd.	710 Excelsior Life Bldg., Toronto 1, Ont.	Vermilion
Granville Oils Ltd.	4 Clarence Bldg., 122-8th Ave. W., Calgary	Turner Valley
Harris Wells Ltd.	201 Lancaster Bldg., Calgary	Turner Valley
Highwood-Sarcee Oils Ltd.	614 Lancaster Bldg., Calgary	Turner Valley
Hollingsworth Oils Ltd.	210 Toole Peet Bldg., Calgary	Vermilion
Home Oil Co. Ltd.	228 Lougheed Bldg., Calgary	Turner Valley
Imperial Oil Ltd.	56 Church St., Toronto, Ont.	Turner Valley
Independent Royalties Ltd.	403 Lancaster Bldg., Calgary	Turner Valley
Kamalta Well Operators Ltd.	201 Lancaster Bldg., Calgary	Turner Valley
Lion Producing Co. Ltd.	328a-8th Ave. W., Calgary	Turner Valley
Major National Oils Ltd.	407 Lancaster Bldg., Calgary	Turner Valley
Major Oil Ltd.	403 Lancaster Bldg., Calgary	Taber
Major Oil Investments Ltd.	407 Lancaster Bldg., Calgary	Turner Valley
McDougall-Segur Exploration Company of Canada Ltd.	405-8th Ave. W., Calgary	Turner Valley
Mercury Oils Ltd.	301 Lancaster Bldg., Calgary	Turner Valley
Mid Continent Oil & Gas Ltd.	213 Dominion Bank Bldg., Calgary	Conrad
Miracle Oils Ltd.	301 Lancaster Bldg., Calgary	Turner Valley
Miracle Royalties Ltd.	301 Lancaster Bldg., Calgary	Turner Valley
Model Oils Ltd.	201 Lancaster Bldg., Calgary	Turner Valley
National Petroleum Corp. Ltd.	401 Leeson-Lineham Bldg., Calgary	Turner Valley
Newell & Chandler Ltd. (a)	203 Wilson Electric Bldg., Calgary	
Northeast Petroleums Ltd.	306 Lancaster Bldg., Calgary	Turner Valley
Oil Ventures Ltd.	501 Leeson-Lineham Bldg., Calgary	Turner Valley
Okalta Oils Ltd.	Renfrew Bldg., Calgary	Turner Valley
Pacific Petroleums Ltd. (N.P.L.)	501 Leeson-Lineham Bldg., Calgary	Turner Valley
Ponalta Syndicate.	209 Agency Bldg., Edmonton	Lloydminster
Princeville Petroleums Ltd.	720 Stock Exchange Bldg., Vancouver, B.C.	Vermilion
P.S. & D. Oils Ltd.	308 Lancaster Bldg., Calgary	Princess

(a) Drilling only.

(b) Operates an absorption plant.

DIRECTORY OF FIRMS—Continued

Crude Oil Producers—Concluded

Name	Address	Location of field
ALBERTA—Concluded		
Regal Royalties Ltd.	401 Leeson-Lineham Bldg., Calgary	Turner Valley
Renown Royalties Ltd.	201 Lancaster Bldg., Calgary	Turner Valley
Reward Spooner Model Ltd.	717 Lancaster Bldg., Calgary	Turner Valley
Royal Canadian Oils Ltd.	403 Lancaster Bldg., Calgary	Turner Valley
Royal Crest Petroleum Ltd.	232 Lougheed Bldg., Calgary	Turner Valley
Royalite Oil Co. Ltd. (e)	201 Lancaster Bldg., Calgary	Turner Valley
S. A. C. Oils (Alberta) Ltd.	Room 301, 119 Sixth Ave. W., Calgary	Turner Valley
Shaw Royalties Ltd.	720-475 Howe St., Vancouver, B.C.	Lloydminster
Shaw Petroleum Co. Ltd.	Elks Bldg., Calgary	Turner Valley
Shell Oil Company of Canada Ltd.	Lloydminster	Lloydminster
Silverdale Trust Ltd.	25 Adelaide St. E., Toronto, Ont.	Jumping Pound
Smyth No. 1 (Walter Thorn)	Lloydminster	Lloydminster
Southwest Petroleum Co. Ltd.	208 Walter Scott Bldg., Moose Jaw, Sask.	Lloydminster
Sovereign Royalties Ltd.	604-606 Second St. W., Calgary	Turner Valley
Sparks, T. A.	317 Alberta Corner, Calgary	Turner Valley
Standard Oil Company of British Columbia Ltd.	401 Somerset Bldg., Winnipeg, Man.	Lloydminster
Sunburst Oil Co. Ltd.	906 Marine Bldg., Vancouver, B.C.	Taber
Sunset Oils Ltd.	c/o Prudential Trust Ltd., 800 Lancaster Bldg., Calgary	Turner Valley
Three Point Petroleum Ltd.	302 Toronto General Trusts Bldg., Calgary	Turner Valley
Turner Valley Royalties Ltd.	232 Lougheed Bldg., Calgary	Turner Valley
Twin Valley Oil Royalties Ltd.	232 Lougheed Bldg., Calgary	Turner Valley
United Assets Ltd.	804 Southam Bldg., Calgary	Turner Valley
Valley Oil Operators Ltd.	232 Lougheed Bldg., Calgary	Turner Valley
Vanpeg Royalties Ltd.	301 Lancaster Bldg., Calgary	Turner Valley
Vulcan-Brown Petroleum Ltd.	301 Lancaster Bldg., Calgary	Turner Valley
Wain Con Oils Ltd.	232 Lougheed Bldg., Calgary	Turner Valley
Wainwright Petroleum Ltd.	431 Tegler Bldg., Edmonton	Wainwright
Western Petroleum Operators Ltd.	10625-99 Ave., Edmonton	Wainwright
Westside Royalties Ltd.	303 Lancaster Bldg., Calgary	Turner Valley
Winalta Royalties Ltd.	232 Lougheed Bldg., Calgary	Turner Valley
York Oils Ltd. (N.P.L.)	301 Lancaster Bldg., Calgary	Turner Valley
	414 Pacific Bldg., Hastings St. W., Vancouver, B.C.	Turner Valley
NORTHWEST TERRITORIES—		
Imperial Oil Ltd. (Canol Project)	56 Church St., Toronto, Ont.	Fort Norman
Imperial Oil Ltd. (Norman Wells)	56 Church St., Toronto, Ont.	Fort Norman

(c) In addition to operating and drilling wells in the Turner Valley field, this company operates an absorption plant.

OTHER NON-METAL MINING INDUSTRIES

DIRECTORY OF FIRMS—Continued

Asbestos Mining Industry

Name of firm	Head office or general office	Location of mine
QUEBEC—		
Asbestos Corporation Ltd.	Thetford Mines.....	Thetford Mines, Black Lake, Coleraine
Asbestos Crude & Fibre Mines Ltd. (*).....	1410 Stanley St., Montreal, Que.....	Coleraine
Bell Asbestos Mines Ltd.	Thetford Mines.....	Thetford Tp.
Canadian Johns-Manville Co. Ltd.	Sun Life Bldg., Montreal, Que.....	Asbestos
Conwest Exploration Co. Ltd. (*).....	85 Richmond St., Toronto, Ont.....	Coleraine Tp.
Carswell, L. M.	Renfrew, Ont.....	Blythfield Tp.
Flintkote Mines Ltd. (*).....	283 Roxborough St. E., Toronto, Ont.....	Thetford Mines
International Asbestos Co. Ltd. (*).....	66 Wellington St. N., Sherbrooke.....	St. Adrien de Ham
Johnson's Company.....	Thetford Mines.....	Thetford Mines, Coleraine
Nicolet Asbestos Mines Ltd.	820 Transportation Bldg., Montreal, Que.....	Norbestos
Quebec Asbestos Corp. Ltd.	East Broughton Station.....	East Broughton Station

(*) Carried on exploration or development work only.

Feldspar and Quartz Mining Industry

- | | |
|--------------------------|--------------------------------|
| (a) Produces silica | (e) Produces nepheline syenite |
| (b) Produces feldspar | (f) Produces grinding pebbles |
| (c) Operates a mill | (g) Contractor |
| (d) Also produces kaolin | |

Name of firm	Head office address	Location of mine or mill
NOVA SCOTIA—		
Nairn, J. (a).....	24 Whitney Ave., Sydney.....	Leitches Creek
Stevens, Archie (a).....	11 McKenzie St., Glace Bay.....	Melford
QUEBEC—		
Bigelow, Gordon (b) (g).....	Glen Almond.....	Derry Tp.
Bon Ami Ltd. (b) (c).....	13719 Notre Dame St. E., Montreal.....	Montreal
Buckingham Feldspar Inc.	276 St. James St. W., Montreal.....	Buckingham
Canadian Carborundum Co. Ltd. (a) (c).....	Box 57, Niagara Falls, Ont.....	St. Canut
Canada China Clay & Silica Ltd. (a) (d).....	1600 Royal Bank Bldg., Toronto, Ont.....	Amherst Tp.
Canadian Flint & Spar Co. Ltd. (a) (b) (c).....	Room 512, Victoria Bldg., Ottawa, Ont.....	Buckingham
Consumers Industrial Minerals Ltd.	8661 Drolet, Montreal, Que.....	Montcalm Co.
Hill, Wm. (a) (f).....	Glen Almond.....	Buckingham Tp.
Industrial Silica Corp. (a).....	Room 408, 266 St. James St., Montreal.....	Roberval Co.
Lafrance, Ovila (a).....	Angers.....	Buckingham Tp.
Law, S. H. (a) (b).....	Room 28, 14 Toronto St., Toronto, Ont.....	Derry Tp.
Montpetit, Euclide (a).....	Melochville.....	Beauharnois Co.
Morin, A. H. (a) (b).....	Box 3, Buckingham.....	Buckingham Tp.
St. Lawrence Alloys & Metals Ltd. (a) (c).....	Beauharnois.....	Beauharnois Co.
United Mining Industries Ltd. (a) (b).....	1451 Notre Dame St. W., Montreal.....	Buckingham
ONTARIO—		
American Nepheline Corp. (e).....	Lakefield.....	Methuen Tp.
Bancroft Mica & Stone Products (b) (c).....	Bancroft.....	Faraday Tp.
Bathurst Feldspar Mines Ltd. (b).....	Room 508, 21 King St. E., Toronto.....	Bathurst Tp.
Buffalo Ankerite Gold Mines Ltd. (f).....	Box 533, South Porcupine.....	Deloro Tp.
Canspar Mines Ltd. (b).....	100 Adelaide St. W., Toronto.....	Barry's Bay
Conger Feldspar Mining Co. Ltd. (b).....	10 Adelaide St. E., Toronto.....	Conger Tp.
Dominion Mines & Quarries Ltd. (a) (c).....	Canada Life Bldg., Toronto.....	Killarney
Fortenac Floor & Wall Tile Co. Ltd. (b) (c).....	Kingston.....	Kingston
International Nickel Co. of Canada Ltd. (a).....	Copper Cliff.....	Lawson Tp.
Kingston Silica Mines Ltd. (a) (c).....	R. R. No. 1, Kingston.....	Pittsburg Tp.
Manitoulin Quartzite Co. (a) (c).....	732 Langlois Ave., Windsor.....	Manitoulin Island
Quartz Crystals Mining Co. of Canada Ltd. (a).....	712 Federal Bldg., Toronto.....	Lansdowne Tp.
Verona Rock Products Ltd. (a) (b).....	330 Bay St., Toronto.....	Verona
Wright and Co. (a) (c).....	960 Queen St., Sault Ste. Marie.....	Deroche Tp.
SASKATCHEWAN—		
Hudson Bay Mining & Smelting Co.	Flin Flon, Man.....	

DIRECTORY OF FIRMS—Continued

Firms in the Gypsum Mining Industry

Name of firm	Head office address	Plant location
NOVA SCOTIA—		
Canadian Gypsum Co. Ltd.	170 Bloor St. W., Toronto, Ont.	Wentworth
Conn. Adamant Plaster Co.	10 River St., New Haven, Conn., U.S.A.	Cheverie
Gypsum, Lime & Alabastine, Canada, Ltd. (idle)	Paris, Ont.	Baddeck Bay
National Gypsum (Canada) Ltd.	325 Delaware Ave., Buffalo, N.Y.	Walton, Dingwall, Cheti- camp
Victoria Gypsum Co. Ltd.	Little Narrows	Little Narrows
Windsor Plaster Co. Ltd.	Windsor	Brooklyn, Hants Co.
NEW BRUNSWICK—		
Canadian Gypsum Co. Ltd.	170 Bloor St. W., Toronto, Ont.	Hillsborough
ONTARIO—		
Canadian Gypsum Co. Ltd.	170 Bloor St. W., Toronto	Hagersville
Cayuga Gypsum Co. Ltd.	Caledonia	North Cayuga Tp
Gypsum, Lime & Alabastine, Canada, Ltd.	Paris	Caledonia
MANITOBA—		
Gypsum, Lime & Alabastine, Canada, Ltd.	Paris, Ont.	Gypsumville
Western Gypsum Products Ltd.	503 McArthur Bldg., Winnipeg	Amaranth
BRITISH COLUMBIA—		
Gypsum, Lime & Alabastine, Canada, Ltd.	Paris, Ont.	Falkland
Western Gypsum Products Ltd.	McArthur Bldg., Winnipeg	Mayook

Firms in the Iron Oxide Mining Industry

Name of firm	Head office address	Location of plant or mine
QUEBEC—		
Argall, Mrs. Thomas H.	Pointe du Lac	Pointe du Lac
Girardin, Chas. D.	Yamachiche	Almaville en Haut
Lafraniere, Philias	St. Louis de France	St. Louis de France
Mauricie Oxide Co.	259-6th Ave., Grand Mere	St. Adelphe Co.
The Sherwin-Williams Co. of Canada Ltd. (*)	2875 Centre St., Montreal	Red Mill, Champlain Co.
BRITISH COLUMBIA—		
Davidson, J. G.	346 Surfton Place, La Jolla, California, U.S.A.	Alta Lake

(*) Produce refined grades.

The Mica Mining Industry

QUEBEC—		
Asbestos Crude & Fibre Mines Ltd.	1410 Stanley St., Montreal	Courte
Blackburn Bros. Ltd.	85 Sparks St., Ottawa, Ont.	Cantley and Perkins
Charbonneau, Hector	Perkins	Perkins
Cross, S. and B.	Cascades	Cascades
Cross, W. C.	209 Bridge St., Hull	Hull Tp.
Delisle, Jos.	Mistassini	Lac St. Jean
Gagne, Louis	St. Michel de Wentworth	Argenteuil Co.
Glover, J. W.	13 Lakeview Terrace, Ottawa, Ont.	Papineau Co.
Jainisse, Dessureault	31 Graham St., Hull	Argenteuil Co.
Laurin, Ernest	Buckingham	Buckingham
Lawler, Patrick	Wilson's Corners	
Mica Co. of Canada Ltd.	2 Lois St., Hull	
Mineault, Aime	Perkins	Perkins
Perkins Mills Mica Co. Ltd.	360 St. James St. W., Montreal	
Perriault, Arsine	39 rue Champlain, Shawinigan Falls	St. Mathieu
Pink Lake Mica Mines Ltd.	74 King St., Toronto	Hull Co.
Poirier, Adelard	Wilson's Corners	
Rainville, Paul de	Perkins	Perkins
Renaud, Adelard	Perkins	Perkins
Renaud, Josphat	Perkins Mills	Perkins
Renaud, Yvon	Notre Dame de Sallette	
Rousseau, Lorne	St. Remi	Argenteuil
Shawinigan Mica Ltd.	Shawinigan Falls	Pallette
Siscoe Metals Ltd.	907 Dominion Square Bldg., Montreal	Suzor
Sparks, W. J.	Kazabazua	
Trudeau, W.	Old Chelsea	
Trudeau, Victor	Ottawa, Ont.	Pontiac Co.
Wallingford, W. M.	Gatineau Point	Lake Gerard
Wallingford, E. Ltd.	Perkins	Templeton

DIRECTORY OF FIRMS—Continued

The Mica Mining Industry—Concluded

Name of operator	Head office address	Location of mine or plant
ONTARIO—		
Green, W. E. & Bro.	Perth Road.	Ottie Lake
Kingston Mica Mining Co. Ltd.	Godfrey.	Godfrey
Lee, W. W.	Westport.	Bedford
Loughborough Mining Co. Ltd.	Sydenham.	Frontenac
Micaspar Industries Ltd.	16 James St., Hamilton.	Frontenac
Orser & Smith.	Cataraqui.	Bedford Tp.
Purdy Mica Mines Ltd.	184 Bay St., Toronto.	Eau Claire
Sydenham Mining Co. Ltd.	Box 252, Kingston.	Loughboro
Watts, R. W.	21 Isabella St., Perth.	Perth
BRITISH COLUMBIA—		
Fairey & Co.	661 Taylor St., Vancouver.	Vancouver

Firms in the Peat Industry

(*) Active but no shipments made.

(b) Produces peat fuel.

(a) Produces moss.

(c) Produces humus.

(d) Inactive in 1945.

Name of firm	Head office address	Location of bog or plant
NEW BRUNSWICK—		
Atlantic Peat Moss Co. Ltd. (*)	513 Rachel St. E., Montreal, Que.	Gloucester
Fafard Peat Moss Co. (a)	Shippegan.	Shippegan
Western Peat Co. Ltd. (*)	Box 699, New Westminster, B.C.	Shippegan
QUEBEC—		
Allied Peat Moss Corp. (a)	Cacouna.	Cacouna
Beausejour Peat Moss (a)	St. Romuald.	St. Lambert
Bourque & Fils (a)	St. Marc des Carrieres.	St. Marc des Carrieres
Excel Peat Ltd. (a)	319 rue Lafontaine, Riviere-du-Loup.	Isle aux Coudres
Maple Leaf Peat Ltd. (a)	303A rue Lafontaine, Riviere-du-Loup.	St. Antonin
Premier Peat Moss Ltd. (a)	Isle Verte.	Isle Verte
Perfect Peat Products (a)	303A rue Lafontaine, Riviere-du-Loup.	St. Antonin
Quebec Peat Moss Co. (a)	St. Guillaume d'Upton.	St. Bonaventure
Roy, Romeo (a)	St. Ulric.	St. Ulric
Roy, Louis (a)	Riviere Blanche.	Riviere Blanche
Saguenay Peat Moss Co. Ltd. (a)	187 Jacques Cartier, Chicoutimi.	Bagot Tp.
Senneterre Peat & Moss Mines Ltd. (a)	Senneterre.	Senneterre
Tourbiere Riviere-Ouelle (a)	2 Cote d'Abraham, Quebec.	Riviere Ouelle
Tourbiere de Pointe-au-Pere (a)	Mont Joli.	Pointe au Pere
Trump Peat Products Ltd. (a)	Riviere du Loup.	Riviere du Loup
ONTARIO—		
Arctic Peat Moss Corp. Ltd. (a)	200 Sterling Securities Bldg., Winnipeg, Man.	Crozier
Canadian Humus Products (c)	Suite 1010, 100 Adelaide St. W., Toronto.	Beverley Tp.
Erie Peat Ltd. (a)	Box 500, Port Colborne.	Wainfleet Tp.
Leasa Peat Works (a) (b)	106 Britannia St., Stratford.	Ellice Tp.
Polar Bear Peat Moss Products (a)	Fort Frances.	Pinewood
Pringle, J. A. (*) (a)	Arden.	Arden
MANITOBA—		
Winnipeg Supply & Fuel Co. Ltd. (a)	812 Boyd Bldg., Winnipeg.	Shelley
McCabe Bros. Grain Co. Ltd. (a)	980 Grain Exchange Bldg., Winnipeg.	Shelley
BRITISH COLUMBIA—		
Alouette Peat Products Ltd. (a)	Pitt Meadows.	Pitt Meadows
B.C. Peat Company Ltd. (a)	302 Royal Bank Bldg., Vancouver.	Ladner
Bymerood Peat Farm (a)	2707 McKay Ave., New Westminster.	Burnaby
Coast Peat Co. Ltd. (a)	736 Granville St., Vancouver.	Burnaby
Columbia Products Ltd. (a)	Box 699, New Westminster.	Lulu Island
Commercial Peat Co. Ltd. (d)	R.R. 2, Eburne.	
Excelsior Peat Ltd. (a)	6633 Yew St., Vancouver.	Burnaby
Industrial Peat Co. (a)	Box 329, New Westminster.	Delta Municipality
Lulu Island Peat Co. Ltd. (a)	R.R. 2, Eburne.	Richmond Tp.
Nielsen, E. and M. F. (a)	R.R. 2, Eburne.	Westminster
Northern Peat Moss Co. Ltd. (a)	R.R. 2, Eburne.	Richmond Tp.
Pacific Peat Products Ltd. (a)	814 Hall Bldg., Vancouver.	New Westminster
Western Peat Co. Ltd. (a)	Box 699, New Westminster.	Lulu Island

DIRECTORY OF FIRMS—Continued

Firms in the Salt Industry

Name of firm	Head or executive office	Location of plant
NOVA SCOTIA— Malagash Salt Co. Limited.....	196 Provost St., New Glasgow.....	Cumberland Co.
ONTARIO— Brunner, Mond Canada, Ltd..... Canadian Industries Limited..... Goderich Salt Co. Ltd..... Sifto Salt Co. Ltd..... Warwick Pure Salt Co. Ltd..... Purity Flour Mills Ltd.....	Canadian Bank of Commerce Bldg., Toronto Box 10, Montreal, Que..... Box 577, Goderich..... 2240 Sun Life Bldg., Montreal, Que..... R.R. 5, Watford..... 287 MacPherson Ave., Toronto.....	Essex Co. Essex Co. Goderich Sarnia Lambton Co. Goderich
MANITOBA— Canadian Industries Ltd.....	Box 10, Montreal, Que.....	Neepawa
ALBERTA— Industrial Minerals Ltd.....	2240 Sun Life Bldg., Montreal, Que.....	Waterways

Firms in the Talc and Soapstone Industry

Name of firm	Head office address	Location of plant or mine
QUEBEC— Baker Mining & Milling Co. Ltd..... Broughton Soapstone & Quarry Co. Ltd..... Fortin, Charles..... Pharo, L. C. Co. Ltd.....	4010 St. Catherine St. W., Montreal..... Broughton Station..... Robertsonville..... 187 St. Maurice St., Thetford Mines.....	Highwater Broughton Thetford Tp. Leeds Tp.
ONTARIO— Canada Talc Limited.....	Madoc.....	Huntingdon Tp.

THE MISCELLANEOUS NON-METAL MINING INDUSTRIES

(*) Active but not producing

Name of operator, province and product	Head office address	Plant location
Barite— NOVA SCOTIA— Canadian Industrial Minerals Ltd.....	Walton, N.S.....	Walton
ONTARIO— Wood Roll Mines Ltd.....	347 Bay St., Toronto.....	Langmuir
BRITISH COLUMBIA— Summit Lime Works Ltd..... Mountain Minerals Ltd.....	Box 273, Lethbridge, Alta..... Box 273, Lethbridge, Alta.....	Golden M.D. Golden M.D.
Breite— QUEBEC— Aluminum Company of Canada Ltd.....	Sun Life Building, Montreal.....	Wakefield
Corundum— ONTARIO— Craigmont Corundum Project.....	Dept. of Reconstruction, Ottawa.....	Raglan Twp.
Diatomite— NOVA SCOTIA— G. W. Wightman (Mrs.).....	Smith's Cove, N.S.....	Digby Co.
BRITISH COLUMBIA— Fairey and Co.....	661 Taylor St., Vancouver.....	Cariboo M.D. Vancouver
Fluorspar— ONTARIO— Bassett Fluorspar Mining Synd. Ltd..... Dominion Magnesium Ltd..... Gilman, R. T..... Millwood Fluorspar Mines Ltd..... Reliance Fluorspar Mining Synd. Ltd..... Stocklosar, Chas. A..... Tops Mining Synd. Ltd. (*).....	Room 908, 36 Toronto St., Toronto..... 67 Yonge St., Toronto..... 13 Govt. Road W., Kirkland Lake..... Box 206, Madoc..... Madoc..... Box 198, Madoc..... c/o W. E. Clark, Harcourt.....	Madoc Twp. Cobden Madoc Dist. Madoc Dist. Huntingdon Tp. Huntingdon Tp. Cardiff Tp.
Garnet— ONTARIO— Niagara Garnet Co.....	c/o Wm. A. Yarwood, 8573 Krull Parkway, Niagara Falls, N.Y.....	River Valley

THE MISCELLANEOUS NON-METAL MINING INDUSTRIES IN—Concluded

(*) Active but not producing.

Name of operator, province and product	Head office address	Plant location
Graphite— ONTARIO— Black Donald Graphite Ltd.....	Black Donald Mines.....	Brougham Tp.
Grindstones— NEW BRUNSWICK— Read, H. C.....	Bathurst.....	Stonehaven
Lithium Minerals— MANITOBA— Lithium Corp. of Canada Ltd. (*)..... Sherritt Gordon Mines Ltd. (*).....	403 Avenue Bldg., Winnipeg..... 25 King St. W., Toronto, Ont.....	Bernie and Cat Lakes Herb Lake
Magnetitic Dolomite— QUEBEC— Canadian Refractories Ltd.....	1050 Canada Cement Bldg., Montreal.....	Kilmar and Harrington
Mineral Waters— QUEBEC— Cie d'Eau Minérale de St. Hyacinthe..... Eau Minérale Etoile..... Dore Daird..... Gurd, Charles & Co. Ltd..... Lemay, Lucien..... Levesque, Ernest (*)..... Gauthier, Charles..... Minard, Edward..... Montclair-Richelieu Spring Water Co. Ltd..... Pellerin, A., and Sons..... Sources Abenakis Springs Ltd..... Source Coulombia..... Source d'Eau Minérale Radnor..... Usine d'Embouteillage Maski.....	632 Concord Ave., St. Hyacinthe..... Ste. Genevieve de Batiscan..... Desbiens Lac St. Jean..... 1016 Bleury St., Montreal..... St. Francois du Lac..... Riviere-du-Loup Station..... Louisville..... Maskinonge..... Chambly Basin..... St. Barnabe N..... 366 rue Racine, Granby..... L'Epiphanie..... St. Maurice..... St. Justin.....	St. Hyacinthe Batiscan Roberval Varennes Nicolet Tp. St. Louis de Kamouraska St. Leon Maskinonge Chambly St. Maurice St. Francois du Lac L'Epiphanie St. Maurice St. Justin
ONTARIO— Carlsbad Springs, The..... Deneault, J. F..... Gurd, Chas., & Co. Ltd. (*)..... Renaud, Victor.....	Carlsbad Springs..... Bourget..... 1016 Bleury St., Montreal, Que..... Blackburn.....	Gloucester Tp. Bourget Caledonia Springs Blackburn
Phosphate— QUEBEC— Bigelow, Robert..... Blackburn Bros. Ltd..... High-Rock Phosphates Ltd..... Trudel, Armand.....	Buckingham..... 85 Sparks St., Ottawa..... 41 Main St., Buckingham..... Perkins.....	Bowman Tp. Perkins Portland W. Tp. Templeton
ONTARIO— Ontario Phosphate Industries Ltd. (*).....	Room 1101, 62 Richmond St. W., Toronto...	Bedford Tp.
Silica Brick— NOVA SCOTIA— Dominion Steel & Coal Corp. Ltd.....	Sydney.....	Sydney
ONTARIO— Algoma Steel Corp. Ltd.....	Sault Ste. Marie.....	Sault Ste. Marie
Sodium Carbonate— BRITISH COLUMBIA— Bishop, V. C. (Mrs.).....	c/o Boyds Garage, Clinton.....	Clinton Area
Sodium Sulphate— SASKATCHEWAN— Hart, Dr. D. C. (*)..... Horseshoe Lake Mining Co. Ltd. (*)..... Mellor, John F. (*)..... Midwest Chemicals Ltd..... Natural Sodium Products Ltd..... Sybouts Sodium Sulphate Co. Ltd.....	606 Broder Bldg., Regina..... Ormiston..... Alsask..... Palo..... Bishopric..... Gladmar.....	Snake Hole Lake Ormiston Alsask Whiteshore Lake Frederic Lake, Alsask Gladmar
Sulphur (Pyrites)— QUEBEC— Noranda Mines Ltd..... Waite-Amulet Mines Ltd.....	Royal Bank Bldg., Toronto..... Noranda.....	Noranda Duprat Tp.
ONTARIO— International Nickel Company of Canada Ltd. (†).....	Copper Cliff.....	Copper Cliff
BRITISH COLUMBIA— Consolidated Mining & Smelting Company of Canada Ltd. (†)..... Britannia Mining & Smelting Co. Ltd.....	Trail..... Britannia Beach.....	Trail Britannia Beach

(†) Recover sulphur from smelter gas.

CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS

DIRECTORY OF FIRMS—Continued

PORTLAND CEMENT PRODUCERS

Name of firm	Head office address	Location of plant
QUEBEC— Canada Cement Company Ltd.....	Box 290, Station B, Montreal.....	Hull, Montreal East
ONTARIO— Canada Cement Company Ltd..... St. Mary's Cement Company Ltd.....	Box 290, Station B, Montreal, Que..... 357 Bay St., Toronto.....	Belleville, Port Colborne St. Mary's
MANITOBA— Canada Cement Company Ltd.....	Box 290, Station B, Montreal, Que.....	Fort Whyte
ALBERTA— Canada Cement Company Ltd.....	Box 290, Station B, Montreal, Que.....	Exshaw
BRITISH COLUMBIA— British Columbia Cement Co. Ltd.....	500 Fort St., Victoria, B.C.....	Bamberton

OPERATORS WHO SHIPPED BRICK, TILE, SEWER PIPE, ETC., MADE FROM DOMESTIC CLAYS

(a) Clay used.
(b) Shale used.(c) Idle 1945.
(*) Produce bentonite.

Name of firm	Head office address	Location of plant
NOVA SCOTIA— Brooks, Stephen & Son (a) (b)..... Harriss & Harriss..... Shaw, L. E. Ltd. (a) (b)..... Standard Clay Products Ltd. (a) (b).....	Box 159, New Glasgow..... 5 Byng Ave., Sydney..... 74 Bedford Road, Halifax..... St. Johns, Que.....	New Glasgow Sydney Lantz Siding New Glasgow
NEW BRUNSWICK— Ryan, M. & Son Ltd. (a)..... Shaw, L. E. Ltd. (b).....	Fredericton..... 74 Bedford Road, Halifax, N.S.....	Fredericton Chipman
QUEBEC— Ascot Tile & Brick Co. Ltd. (c)..... Canada China Clay & Silica Ltd..... Castonguay, Hubert..... Citadelle Brique Ltee (b)..... Desmarais, S. E. & Co. (a)..... East-Angus Brick & Tile (a)..... Laprairie Co. Inc., The (a) (b)..... Montreal Terra Cotta Ltd. (a)..... Potvin & Chandonnet (a)..... Roy, O. & P. (a)..... St. Jean, La Brique, Ltd. (a)..... St. Lawrence Brick Co. Ltd. (b)..... Scott Brique Reg., La (a)..... Standard Clay Products Ltd. (a).....	Ascot Corner..... Kasil..... Deschaillons..... 14 rue St. Joseph, Quebec..... Richmond..... Box 553, East Angus..... 906 University Tower Bldg., Montreal..... 911 Dominion Square Bldg., Montreal..... Deschaillons..... St. George West..... Deschaillons..... 1010 St. Catherine St. W., Montreal..... Scott Junction..... Box 189, St. Johns.....	Ascot Corner Kasil Deschaillons Boischatel Richmond Westbury Tp. Laprairie and Delson Junction Lakeside Deschaillons St. George West Deschaillons Laprairie Scott Junction St. Johns
ONTARIO— Barnes, Wm. R. Co. Ltd. (a)..... Brampton Pressed Brick Co. Ltd. (b)..... Broadwell, B. & Son (a)..... Canadian Pressed Brick Co. Ltd. (b)..... Central Tile Brick Corp. Ltd. (a)..... Chapman Bros. (c)..... Construction Materials Ltd. (a) (b)..... Cooksville Co. Ltd. (b)..... Cornhill, James & Sons Ltd..... Coults, George & Son (c)..... Curtin, F. Estate (a)..... Curtis Bros. (a)..... Deller, Albert & Son (a)..... Dochart Brick, Tile & Terra Cotta Works (a)..... Donaldson, Thos. G. (a)..... Douglas, John R. (a) (c)..... Elliott, James, Jr. (a)..... Elliott, Wm. (a)..... Fletcher Brick & Tile (a)..... Frid Bros. Ltd. (a)..... Gamage, C. R. (c).....	243 Cumberland Ave., Hamilton..... Brampton..... Kingsville..... Kenilworth S. Ave., Hamilton..... Tilbury..... 145 Dawes Road, Toronto..... Drawer 70, New Toronto..... 46 Bloor St. W., Toronto..... Box 36, Chatham..... Thedford..... R. R. 4, Lindsay..... Box 809, Peterborough..... Brownsville..... Amprior..... R. R. 1, Greenock..... Wilkesport..... 519 Wellington St. W., Sault Ste. Marie..... R. R. 1, Glenannan..... Fletcher..... 790 Main St. W., Hamilton..... R. R. 2, Dresden.....	Waterdown Brampton Gosfield S. Tp. Hamilton Tilbury and Belle River East York Tp. Etobicoke Tp. Cooksville Harwich Tp. Bosanquet Tp. Lindsay Otonabee Tp. Brownsville Amprior Culross Tp. Lambton Co. Korah Tp. Bruce Co. Tilbury E. Tp. Hamilton Camden Tp.

DIRECTORY OF FIRMS—Continued

OPERATORS WHO SHIPPED BRICK, TILE, SEWER PIPE, ETC., MADE FROM DOMESTIC CLAYS—
Concluded(a) Clay used.
(b) Shale used.(c) Idle 1945.
(*) Produce bentonite.

Name of firm	Head office address	Location of plant
ONTARIO—Concluded		
Hamilton Pressed Brick Co. Ltd. (a) (b)	211 Kensington Ave. S., Hamilton	Wentworth Co.
Hill, A. W. & Sons	Coatsworth	Tilbury E. Tp.
Howlett, Fred W. & Sons Ltd. (a)	Petrolia	Lambton Co.
Huntsville Brick Works (a)	Box 308, Huntsville	Chaffey Tp.
Interprovincial Brick Co. Ltd. (b)	46 Bloor St. W., Toronto	Cheltenham, Milton
Jamieson Lime Co. (c)	Renfrew	Renfrew
Janes, D. A. (a) (c)	Mt. Brydges	Caradoc Tp.
Jasperson Brick & Tile Co. (c)	Kingsville	Coatsworth Tp.
Koebel Bros. (a)	St. Clements	St. Clements
Lindsay, Earl & Sons (a)	R.R. 2, Wallaceburg	Kent Co.
Martin, Amos C. (a)	R.R. 3, Wallenstein	Peel Tp.
McFarlane, W. J. (b)	Forest	Forest
McFarren, F. B. Ltd. (b)	120 Wellington St. W., Toronto	Streetsville
Milton Brick Co. Ltd. (b)	170 Bloor St. W., Toronto	Esqueness Tp.
Napanee Brick & Tile Works (a)	R.R. 3, Napanee	Lennox Co.
National Fireproofing Co. of Canada Ltd. (a) (b)	57 Bloor St. W., Toronto 5	Wentworth Tp.
National Sewer Pipe Co. Ltd. (a) (b)	Aldershot	Hamilton, Swansea
Northern Brick & Clay Products (a) (c)	New Liskeard	Temiskaming
Norwich Brick & Tile Works (a)	R.R. 2, Norwich	Oxford Co.
Ontario Reformatory (a) (b)	Mimico	Etobicoke Tp.
Ottawa Brick & Terra Cotta Co. Ltd. (a) (b)	Billings Bridge	Billings Bridge
Owen Sound Brick Co. Ltd. (a)	Owen Sound	Owen Sound
Paxton, Fred R. (a)	70 Herrick Ave., St. Catharines	St. Catharines
Phinn Brick Co. (a)	1042 Adelaide St., London	London
Phippen & Son (a)	390 Dawes Road, East York	East York
Seegmiller, E. & E. Ltd. (a)	525 Wendell Ave., Kitchener	Kitchener
Sproat & Sproat (a)	R.R. 4, Seaforth	Tuckersmith Tp.
Standard Brick Co. (a) (c)	500 Greenwood Ave., Toronto	Toronto
Superior Brick & Tile Co. Ltd. (a)	426 Victoria Ave., Fort William	Paipoonge Tp.
Taylor Bros. (a)	Beaverton	Beaverton
Thomson, Ralph (a)	R.R. 4, Atwood	Grey Tp.
Thornton Brick Co. Ltd. (a) (b)	897 Bay St., Toronto 5	York Tp.
Wallace, R. & Son (a)	92 First Ave., North Bay	Widdifield Tp.
Wright, F. M. (a)	Comber	Tilbury W. Tp.
MANITOBA—		
Alsip Brick, Tile & Lumber Co. Ltd. (a)	537 Portage Ave., Winnipeg	Winnipeg, Whitemouth and Portage la Prairie
Pembina Mountain Clays Ltd. (*)	915 Paris Bldg., Winnipeg	Morden
SASKATCHEWAN—		
Alberta Clay Products Co. Ltd. (a)	Medicine Hat, Alta.	Ravensrag, Eastend, Willow
Bruno Clay Works Ltd. (a)	411 Alberta Ave., Saskatoon	Bruno
Dominion Fire Brick & Clay Products Ltd. (a)	Box 99, Moose Jaw	Claybank
Medalta Potteries Ltd. (a)	332-7th Ave. W., Calgary, Alta.	Willows, Eastend
Medicine Hat Potteries (a)	Box 672, Medicine Hat, Alta.	Readlyn
Midland Clay Co. (a) (c)	Willow Bunch	Willow Bunch
Saskatchewan Clay Products Corp. (a)	Estevan	Estevan
Yorkton Brick Yard (a)	Yorkton	Yorkton
ALBERTA—		
Acme Brick Co. Ltd. (a)	125 Alberta Block, Edmonton	Cannell
Aetna Coal Co. (*)	East Coulee	Rosedale Ferry
Alberta Clay Products Co. Ltd. (a)	Medicine Hat	Medicine Hat
Grande Prairie Brick Yard	Grande Prairie	Grande Prairie
Gunderson Brick & Coal Co. Ltd. (b)	Redcliff	Redcliff
Kidd, Gordon L. (*)	Box 230, Drumheller	Drumheller
Little, J. B. & Sons Ltd. (a)	9120-100th Ave., Edmonton	Edmonton
Medicine Hat Brick & Tile Co. Ltd. (a)	Box 100, Medicine Hat	Medicine Hat
Redcliff Pressed Brick Co. Ltd. (a) (b)	Redcliff	Redcliff
BRITISH COLUMBIA—		
Baker Brick & Tile Co. Ltd. (a)	3191 Douglas St., Victoria	Victoria
Bazan Bay Brick & Tile Co.	Saanichton	Bazan Bay
Clayburn Co. Ltd. (a) (b)	850 W. Hastings St., Vancouver	Kilgard
Evans, Coleman & Evans (b)	902 Columbia St., Vancouver	Gabriola Island
Fairey & Co. (a)	661 Taylor St., Vancouver	Vancouver
Glover, F. (*)	Princeton	Princeton
Haug, Wm. & Son (a) (c)	Box 220, Kelowna	Kelowna
Port Haney Brick Co. Ltd. (a)	846 Howe St., Vancouver	Haney
Port Moody Brick Co. (a)	1875 E. 38th Ave., Vancouver	Port Moody
Richmond, George W. (a) (c)	4190 Blenheim St., Vancouver	Kilgard
Vancouver Brick & Tile Co. Ltd. (a) (c)	902 Columbia St., Vancouver	Sullivan

DIRECTORY OF FIRMS—Continued

PRODUCERS OF STONEWARE AND POTTERY

Name of firm	Head office address	Location of plant
NEW BRUNSWICK—		
Canuck Pottery.....	198 Union St., Saint John.....	Saint John
Deichmann, K.....	Moss Glen.....	Moss Glen
Foley Pottery Ltd. (c).....	Saint John.....	Saint John
QUEBEC—		
Laurentian Art Pottery Inc.....	St. Jerome.....	St. Jerome
Poterie de Saguenay, La.....	Chicoutimi.....	Chicoutimi
Syndicat des Ceramistes Paysans de Beauce.....	St. Joseph de Beauce.....	St. Joseph de Beauce
ONTARIO—		
Foster Pottery Co.....	Main St. W., Hamilton.....	Hamilton
ALBERTA—		
Medalta Potteries Ltd.....	332-7th Ave. W., Calgary.....	Medicine Hat
Medicine Hat Potteries.....	Medicine Hat.....	Medicine Hat

(c) Idle 1945.

FIRMS IN THE IMPORTED CLAY PRODUCTS INDUSTRY

Name of firm	Address
QUEBEC—	
Canada Firebrick Company Limited.....	4741 St. Ambroise St., Montreal
Canadian Potteries Limited.....	5 Mackenzie King St., St. Johns
Standard Clay Products.....	St. Johns
Walker-Hind-Sutherland Refractories Ltd.....	309 St. Ferdinand St., Montreal
ONTARIO—	
Ajax Clay Products.....	4160 Dundas St. W., Toronto
Armaco Limited.....	Bower St., Acton
Canadian Ohio Brass Company Limited.....	Thorold Rd., Niagara Falls
Canadian Porcelain Company Limited.....	Paradise Rd., Hamilton
Canada Vitriified Products Limited.....	Talbot St. E., St. Thomas
Dominion Potteries.....	Dundas St. N., Oakville
Donvale Pottery Company.....	27 Davies Ave., Toronto 8
Ecanada Art Pottery.....	206 Dundurn St. S., Hamilton
Frontenac Floor & Wall Tile Co. Limited.....	Kingston
Georgetown Clay Products Limited.....	King St., Georgetown
Green, A. P., Fire Brick Co. Ltd.....	Commercial St. (Leaside), Toronto 12
Hamilton Potteries Limited.....	100 Locke St., Hamilton
McMaster Pottery.....	Main St., Dundas
National Refractories Limited.....	Port Robinson
Plibrico Jointless Firebrick Ltd.....	Hornor Ave., Toronto 14
Robinson Clay Product Co. of Canada Ltd.....	119 Shaftesbury Ave., Toronto
Smith Potteries.....	353 King St. W., Oshawa
Sovereign Potteries Limited.....	282 Sherman Ave. N., Hamilton
Turner's Plastic Fire Brick Co. Ltd.....	Jarvis St., Toronto
Royal York Artware.....	615 Spadina Ave., Toronto
Iva Crumback China.....	53 Perry St., Woodstock
Royal Canadian Art Pottery.....	281 Kensington Ave. N., Hamilton
John Petrik Limited.....	290 Dundas St., Woodstock
BRITISH COLUMBIA—	
Allen Refractories.....	69E 1st Ave., Vancouver

FIRMS IN THE LIME INDUSTRY

(*) Inactive.

(a) Use calcium or high calcium limestone.

(b) Use dolomitic limestone.

(c) Purchase lime.

(d) Kind of limestone not reported.

(e) Brucitic limestone.

Name of firm	Head office address	Location of plant
NOVA SCOTIA—		
Dominion Steel & Coal Corp. Ltd. (b).....	Sydney.....	Sydney
Eastern Lime Co. Ltd. (a) (*).....	Windsor.....	Windsor
NEW BRUNSWICK—		
Bathurst Power & Paper Co. Ltd. (a).....	Bathurst.....	Bathurst
Purdy & Green Ltd. (a).....	204 Metcalfe St., Saint John.....	Saint John
Snowflake Lime Ltd. (a) (b).....	Saint John.....	Saint John

DIRECTORY OF FIRMS—Continued

FIRMS IN THE LIME INDUSTRY—Concluded

(*) Inactive.

(a) Use calcium or high calcium limestone.

(b) Use dolomitic limestone.

(c) Purchase lime.

(d) Kind of limestone not reported.

(e) Brucitic limestone.

Name of firm	Head office address	Location of plant
QUEBEC—		
Aluminum Company of Canada Ltd. (e).....	1700 Sun Life Bldg., Montreal.....	Wakefield
Arnaud, Edwilda (d).....	Joliette.....	Joliette
Bousquet, Adrien (d).....	St. Dominique.....	St. Dominique
Canadian Refractories Ltd. (e).....	1050 Canada Cement Bldg., Montreal.....	(c)
Carriere Trois-Rivieres Ltd. (a).....	St. Louis de France.....	St. Louis de France
Dominion Lime Ltd. (a).....	Lime Ridge.....	Lime Ridge
Cote, Joseph (a).....	Metabetchouan.....	Metabetchouan
Dontigny, Raymond & Armand (d).....	Ste. Thecle.....	Ste. Thecle
Filion, Narcisse (d).....	St. Joachim.....	St. Joachim
Laurentian Stone Co. Ltd. (a).....	195 Nicholas St., Ottawa, Ont.....	Hull
Limoges, Henri (a).....	552 Poupart St., Montreal.....	St. Michel
Mercure, Camille (a).....	555-16th Ave., St. Hyacinthe.....	St. Dominique
Shawinigan Chemicals Ltd. (a).....	Craig St. W., Montreal.....	Shawinigan Falls
Standard Lime Co. Ltd. (a).....	St. Paul de Joliette.....	St. Paul de Joliette
		St. Marc des Carrieres
Trottier, David (d).....	St. Marc des Carrieres.....	St. Marc des Carrieres
ONTARIO—		
Bell, Cecil N. (b).....	R. R. 4, Chesley.....	Sullivan Tp.
Brunner Mond (Canada) Ltd. (a).....	Canadian Bank of Commerce Bldg., Toronto.....	Anderdon Tp.
Canada & Dominion Sugar Co. Ltd. (a).....	Chatham.....	Chatham and Wallaceburg
Canadian Gypsum Co. Ltd. (b).....	170 Bloor St. W., Toronto.....	Guelph
Carleton Lime Products Ltd. (a).....	Box 26, Carleton Place.....	Carleton Place
Chemical Lime Ltd. (a).....	Beachville.....	Beachville
Gypsum, Lime & Alabastine, Canada, Ltd. (a) (b).....	Paris.....	Beachville, Glen Christie
		Halton
Jamieson Lime Co. (a).....	Renfrew.....	Horton Tp.
North American Cyanamid Ltd. (a).....	Niagara Falls.....	Niagara Falls
Rockwood Lime Co. (b).....	Box 46, Rockwood.....	Rockwood
Shane Lime & Charcoal Co. Ltd. (a).....	Eganville.....	Grattan Tp.
MANITOBA—		
Building Products & Coal Co. Ltd. (b).....	111 Christie St., Winnipeg.....	Inwood
Gypsum, Lime & Alabastine, Canada, Ltd. (b).....	Paris, Ont.....	(c)
Manitoba Sugar Co. Ltd. (a).....	Fort Garry.....	Fort Garry
Winnipeg Supply & Fuel Co. Ltd. (a) (b).....	812 Boyd Bldg., Winnipeg.....	Moosehorn and Stonewall
ALBERTA—		
Canadian Sugar Factories Ltd. (a).....	Raymond.....	Raymond and Picture Butte
Errico, M. (d).....	Cadomin.....	Cadomin
Loder's Lime Co. Ltd. (a).....	Kananaskis.....	Kananaskis
Summit Lime Works Ltd. (a).....	Box 273, Lethbridge.....	Crow's Nest District
BRITISH COLUMBIA—		
Pacific Lime Co. Ltd. (a).....	744 W. Hastings St., Vancouver.....	Texada Island
Pacific Mills Ltd. (a).....	Campbell Ave., Vancouver.....	Ocean Falls

PRINCIPAL SAND AND GRAVEL OPERATORS

In addition to the names listed below, production has been reported by the railway companies for ballast, and also a considerable amount by counties and townships in Ontario for road use.

(w) Markets washed or screened material.

Name of firm	Head office address	Location
NOVA SCOTIA—		
Crockett, V. B.	Wallace.....	Belmont
Nova Scotia Department of Highways.....	Halifax.....	Various
Rayner Construction Ltd. (w).....	29 Commercial Rd., Leaside, Ont.....	East Mines
Warren Bituminous Paving Co. Ltd.....	1454 Bloor St. W., Toronto 9, Ont.....	Yarmouth
NEW BRUNSWICK—		
Anderson, A. W. Estate.....	Fairville.....	Fairville
Likely, Jos. A. Ltd.....	Saint John.....	East Saint John
New Brunswick Department of Highways.....	Fredericton.....	Various
Warren Bituminous Paving Co. Ltd. (w).....	1454 Bloor St. W., Toronto 9, Ont.....	Sussex
QUEBEC—		
Asselin, Adrien.....	112 Ave. des Oblats, Quebec.....	Ste. Foy
Bigras, Omer.....	Sainte Rose West.....	Sainte Rose West

DIRECTORY OF FIRMS—Continued

PRINCIPAL SAND AND GRAVEL OPERATORS—Continued

Name of firm	Head office address	Location
QUEBEC—Continued		
Bonner Sand and Ballast Ltd. (w)	1434 St. Catherine St. W., Montreal	South Durham
Breen, Mary Ann	Guigues	Guigues
Brouillet Sand & Gravel Co. Ltd. (w)	Rawdon	St. Julienne
Canadian Johns-Manville Co. Ltd.	Sun Life Bldg., Montreal	Asbestos
Coaticook, City of	Coaticook	Coaticook
Compagnie de Sable Ltee (w)	10-3ieme Ave., Quebec	St. Charles River
Consolidated Oka Sand & Gravel Co., Ltd. (w)	243 McCord St., Montreal	Lake of Two Mountains
Gagnon, Arthur	1740 Fourth St., Grand'Mere	Grand'Mere
Goyer, Edouard & Frere	St. Bruno	St. Bruno
Granby, City of	Granby	Granby
Labege, Evariste	Ste. Foy	Ste. Foy
Lafontaine, Philippe (w)	240 de la Ronde, Quebec	St. Charles River
Magog, City of	Magog	Magog
Marchand, Euclide	505-8e rue Almaville-en-haut, Quebec	Mont Carmel
Potier & Freres	8645 rue Casgrain, Montreal	Two Mountains
Quebec, City of	Quebec	Ste. Therese de Beauport
Robert & Fufour Engr.	515 Royale Ave., Beauportville	Ste. Therese de Beauport
St. Francis River Dredging Co. (w)	St. Francis du Lac	St. Francis River
Sables des Mille Iles Ltee, Les	19 rue Dupont, Montreal	St. Henri de Mascouche
Sherbrooke, City of	Sherbrooke	Orford Tp.
Standard Lime Co. Ltd. (w)	Joliette	St. Emelie
Standard Sand & Gravel Ltd. (w)	St. Felix de Valois	St. Felix de Valois
Tremblay, Jos.	376 George St., Shawinigan Falls	St. Mathieu
Two Mountains Sand Co. Ltd.	517 Canada Cement Bldg., Montreal	Two Mountains
Venne, Oscar	Lachenaie	Lachenaie
ONTARIO—		
Axford, J. B. & Son	35 Elm St., St. Thomas	South Yarmouth
Bailey, E. R.	R.R. 5, Embro	Oxford
Barnes, Wm. R. Co. Ltd. (w)	243 Cumberland Ave., Hamilton	Waterdown
Boyd Bros.	Osgoode	Osgoode
Braas Bros. Sand Co. (w)	R.R. 3, Niagara Falls	Stamford
Coleman, Gordon T. (w)	235 Sydney St., Cornwall	Bonville
Consolidated Sand & Gravel Ltd. (w)	402 Harbour Commission Bldg., Toronto	Waterford, Fuller, Paris
Cooper, A. & Co. (w)	212 North May St., Fort William	Thunder Bay
Corley, E. & Sons	94 Adelaide St. N., Lindsay	Ops Tp.
Crosby, William (w)	Princeton	Blenheim Tp.
Cudmore, Harold T.	R.R. 1, Hensall	Hensall
Curran & Briggs Ltd. (w)	61 Haverson Blvd., Toronto	Bancroft, Hagar, Gravenhurst, Burwash, Whitefish
Davison, Lloyd	R.R. 3, Georgetown	Essa Tp.
Dibble Construction Co. Ltd. (w)	248 Albert St., Ottawa	Charlottenburg
Dobie, Mrs. Draper (w)	Port Colborne	Humberstone Tp.
Eagen, Wm.	R.R. 4, Embro	Embro
Eberhart, George	Seaforth	McKillop Tp.
Ellins Bros. (w)	304 Scarlett Rd., Toronto	Etobicoke Tp.
Elliott, Jack (w)	Box 284, Kapuskasing	O'Brien Tp.
Fewster, Stanley	R.R. 4, St. Marys	Oxford Co.
Forwell Sand & Gravel Ltd. (w)	31 Whitney Place, Kitchener	Waterloo Tp.
Foster, R. R.	86 Spadina Ave., Ottawa	Britannia Heights
Foy, G. C. (w)	R.R. 2, Wardsville	Wardsville
Fraser Brace Ltd. (w)	1910 Royal Bank Bldg., 360 St. James St. W., Montreal, Que.	Buchanan Tp.
Galbraith, Frank (w)	Rodney	Rodney
Gauthier, J. T.	Porcupine	Whitney Tp.
Goodreau, Charles E. (w)	R.R. 3, Northwood	Harwich Tp.
Grandmaitre, Donat	71 Montreal Rd., Eastview	McKays Lake
Guelph Sand & Gravel Ltd. (w)	Inkerman St., Guelph	Guelph Tp.
Guelph, City of	Guelph	Guelph
Hall, Thomas G.	Box 67, Plattsville	Blenheim Tp.
Hayward, Gordon	Embro	West Zorra Tp.
Highland Creek Sand & Gravel Ltd. (w)	Highland Creek	Highland Creek
Hill, Walter (w)	Merlin	Romney Tp.
Hollinger Consolidated Gold Mines Ltd.	Timmins	Tisdale Tp.
Howard Sand & Gravel Co. Ltd. (w)	Aldershot	Flamboro E. Tp.
Jupp, A. E. Construction Co. Ltd.	56 Blake St., Toronto 6, Ont.	Medante Tp.
Kettle, Mrs. Wm.	Petrolia	Emiskillen Tp.
Kilbourne, H. & Son	London	Westminster Tp.
Kingston Sand & Gravel Ltd.	235 Wellington St., Kingston	Kingston
Kirkland, Gordon B.	R.R. 3, Lucknow	Ashfield Tp.
Liley, William	R.R. 6, London	London
McAdams, Harry	R.R. 3, Zurich	Hay Tp.
McCreedy, D.	R.R. 2, Thamesford	Thamesford
McGovern, C. L. (w)	Sherkston	Sherkston
McLean, A. B. & Sons (w)	Sault Ste. Marie	Sault Ste. Marie
Morris, P. R. (w)	26 John St. N., Hamilton	Saltfleet Tp.
Nagle, J. M.	Dublin	Hibbert Tp.
National Sand & Material Co., Ltd. (w)	402 Harbour Commission Bldg., Toronto	River
Nicholson Transit Co. (w)	Box 66, River Rouge 18, Mich., U.S.A.	St. Clair River
Park, Margaret	Lucan	Lucan
Quigley's Foundry Sands Ltd. (w)	Bartonville	Waterdown
Quinn, Howard	R.R. 9, Peterborough	Douro Tp.

DIRECTORY OF FIRMS—Continued

PRINCIPAL SAND AND GRAVEL OPERATORS—Concluded

Name of firm	Head office address	Location
ONTARIO—Concluded		
Richardson, J. E.	Thamesville.	Thamesville
Sarjeant Co. Ltd.	Barrie.	Barrie
Sarnia Board of Parks Management (w).	184½ N. Front St., Sarnia.	Lake Huron
Scott, T. J. (w).	489 Bay St., Sault Ste. Marie.	Lake Superior
Smythe, C. Ltd. (w).	Box 8, Postal Station D, Toronto 9.	Mt. Dennis
Speiran, G. A.	R.R. 2, Brussels.	Guy Tp.
Spratt, G. H. (w).	Billings Bridge.	Gloucester Tp.
Tees Transit Co. (w).	55 Whitton Road, Hamilton.	Niagara Bar
United Towing & Salvage Co. Ltd. (w).	635 Common St., Montreal.	Thunder Bay
Woollatt Fuel & Supply Co. Ltd. (w).	2171 Ottawa St., Windsor.	Leamington
Yundt, William (w).	29 Downie St., Stratford.	Ellice Tp.
MANITOBA—		
Alsip Brick, Tile & Lumber Co. Ltd.	537 Portage Ave., Winnipeg.	Beausejour
Brandon, City of.	City Hall, Brandon.	Brandon
Building Products & Coal Co., Ltd. (w).	111 Christie St., Winnipeg.	Birds Hill
Greater Winnipeg Water District.	185 King St., Winnipeg.	Mile 31 and Mile 80, G.W. WD Ry.
Manitoba Department of Highways.	Winnipeg.	Various
McCurdy Supply Co. Ltd. (w).	1034 Arlington St., Winnipeg.	
Provincial Gravel & Coal Co.	608-356 Main St., Winnipeg.	
Rosser, Municipality of.	Rosser.	Rosser
Winnipeg, City of.	223 James Ave., Winnipeg.	Bird's Hill
SASKATCHEWAN—		
Eamon, H. G. & Co.	Biggar.	Biggar
Hudson Bay Mining & Smelting Co. Ltd.	500 Royal Bank Bldg., Winnipeg, Man.	Flin Flon
North Battleford, City of.	1201 King St., North Battleford.	North Battleford
Prince Albert, City of.	Prince Albert.	Prince Albert
Saskatchewan Department of Highways.	Regina.	Various
ALBERTA—		
Alberta Department of Highways.	Edmonton.	Various
Cristall Sand Ltd.	10165-104 St., Edmonton.	Perryvale
Jefferies & Sons Ltd. (w).	Calgary.	East Calgary
Mountain View, District of.	Didsbury.	Mountain View
BRITISH COLUMBIA—		
British Columbia Department of Highways.	Victoria.	Various
Burnaby, District of.	New Westminster.	Burnaby
Chilliwack, City of.	Chilliwack.	Chilliwack Tp.
Consolidated Mining & Smelting Co. of Canada Ltd.	Trail.	Fort Steele and Tadanac
Cranbrook, City of (w).	Cranbrook.	Fort Steele
Deeks Sand & Gravel Co. Ltd. (w).	101 West First Ave., Vancouver.	Seymour Creek, North Van- couver and Coquitlam
Fernie, City of.	Fernie.	Fort Steele
Gilley Bros. Ltd. (w).	902 Columbia St., New Westminster.	Port Coquitlam
Greening, Wm. H.	Armstrong.	Larkin
Highland Sand & Gravel Co., Ltd. (w).	Lynnour.	Lynnour
Hillside Sand & Gravel Ltd. (w).	1075 Main St., Vancouver.	Hillside
McIntyre & Harding Gravel Co., Ltd. (w).	Saanich.	Cordova Bay
Nelson, City of (w).	501 Front St., Nelson.	Nelson
Pitkethly Bros. (w).	8699 Angus Drive, Vancouver.	Vancouver
Port Alberni, City of.	Port Alberni.	Port Alberni
Producers Sand & Gravel Co. (1929) Ltd. (w).	1902 Store St., Victoria.	Royal Bay
Road Materials Ltd. (w).	8699 Hudson St., Vancouver.	North Vancouver
Saanich, District of.	Royal Oak P.O., Vancouver Island.	Saanich District

THE STONE QUARRYING INDUSTRY

(*) Firms operating dressing works in conjunction with quarry.

(†) Did not ship in 1945.

Granite

Name	Head office address	Location
NOVA SCOTIA—		
Bower, A. R.	Box 255, Shelburne.	Shelburne
Dauphinee, W. T. (*)	Shelburne.	Shelburne
Nixon, W. H. & Sons (*)	R.R. 3, Middleton.	Nictaux West
Rice Bros. (*)	Lawrencetown.	Nictaux West
Rice, W. D. (*)	Middleton.	Nictaux West

DIRECTORY OF FIRMS—Continued

THE STONE QUARRYING INDUSTRY—Continued

Granite—Concluded

Name	Head office address	Location
NEW BRUNSWICK—		
Milne Coutts & Co. Ltd. (*)	St. George	St. George
Granite Street Pavement & Construction Co. Ltd.	Box 1137, Saint John	Hampstead
O'Brien & Baldwin (*)	St. George	St. George
Spinney's Quarry	Box 96, St. George	St. George
QUEBEC—		
Anderson, James (*)	Box 125, Beebe	Beebe
Bérubé, Lucien (*)	Brownsburg	Chatham Tp.
Bolduc, Antonio (*)	St. Sebastien	Beauce
Boyer, Hervé	Mont Royal	New Glasgow
Brodies' Ltd. (*)	1070 Bleury St., Montreal	Guenette, Graniteville, Mount Johnson
Bussiére & Frère (*)	St. Sebastien	Ste. Cecile
Carrière Shawinigan	57a First St., Shawinigan Falls	Ste. Flore
Cie de Marbre & de Tuile de Quebec Ltée.	327 Dorchester St., Quebec	Ste. Cecile
Cloutier, R. L. (*)	Beebe	Beebe
Delevaude & Goffin (*)	1365 St. Valier St., Quebec	Chicoutimi
Deschambault Quarry Corp. (*)	56 St. Pierre St., Quebec	St. Gerard
Drummond, La Compagnie Pierre Concasse	Box 712, Sherbrooke	Drummond
Dubois, Honore (*)	Rivière à Pierre	Rivière à Pierre
Gaboriault & Nevers (*)	Box 65, Grenville	Grenville Tp.
Gagnon, Arthur	1740 Fourth St., Grand'Mère	Grand'Mère
Giguère, H. Camille	Rouyn	Rouyn
Gosselin, Oscar	Lac Mégantic	St. Samuel
Granit National Ltée (*)	St. Joseph d'Alma	St. Gédéon, St. Joseph d'Alma
Grenier, Elie	Glenada	Glenada
Jacques, Arthur	Rivière à Pierre	Rivière à Pierre
Lacasse & Boulais	Box 23, Beebe	Beebe
Laforce, H. & Fils (*)	1327 St. Valier St., Quebec	Chicoutimi
Maltais, Charles	St. Joseph d'Alma	St. Joseph d'Alma
Quebec North Shore Paper Co.	680 Sherbrooke St. W., Montreal	Baie Comeau
Riverin & Riverin	Chicoutimi	Chicoutimi
Rousseau, Ben	283 Heriot St., Drummondville	St. Charles
St. Bruno Quarry & Paving Co. Ltd.	636 Ave. Querbes, Outremont	St. Bruno
Scottstown Granite Co. Ltd. (*)	Cap St. Martin	Cap St. Martin
Sherbrooke, City of	Box 754, Sherbrooke	Sherbrooke
Silver Granite Co. Ltd. (*)	2331 rue Provençal, Montreal	St. Samuel, St. Gédéon
Stanstead Granite Quarries Co. Ltd. (†)	Beebe	Beebe
ONTARIO—		
Building Products Ltd. (*)	Box 6063, Montreal, Que.	Madoc
Hewitson Construction Co. Ltd.	509 Public Utilities Bldg., Port Arthur	McIntyre Tp.
Ontario Rock Co. Ltd.	2 College St., Toronto	Peterboro Co.
Verona Rock Products Ltd.	Verona	Verona
MANITOBA—		
Winnitoba Marble Co. Ltd. (*)	1180 Wall St., Winnipeg	West Hawk Lake
BRITISH COLUMBIA—		
Canadian National Railways	Montreal, Que.	Skeena
Coast Quarries Ltd.	1840 West Georgia St., Vancouver	Granite Falls
Nelson, City of	501 Front St., Nelson	Nelson M.D.
Nelson Granite and Monumental Co. (*)	505 Front St., Nelson	Nelson M.D.
Prince Rupert, City of (†)	Prince Rupert	Skeena
Vancouver Granite Co. Ltd.	308 Pacific Bldg., Vancouver	Nelson Island
Vernon Granite & Marble Co. (*)	Box 265, Vernon	Vernon M.D.
Wilson, James (*)	Sirdar	Nelson M.D.

Limestone

NOVA SCOTIA—		
Dillman Bros.	Admiral Rock	Admiral Rock
Eastern Lime Co. Ltd. (*)	Box 60, Windsor	Windsor
Mersey Paper Co. Ltd.	Liverpool	East River Point
Mosher Limestone Co. Ltd.	Upper Musquodoboit	Upper Musquodoboit
Nairn, J. S.	24 Whitney Ave., Sydney	Scotch Lake
Nova Scotia Department of Agriculture	Halifax	Various
Windsor Foundry	Windsor	Windsor
NEW BRUNSWICK—		
Alward, Roy M.	Butternut Ridge	Springhill
Brookville Manufacturing Co. Ltd.	Brookville	Brookville
Elm Tree Limestone Co-operative Co. (*)	Petit Rocher North	Petit Rocher North
Snowflake Lime Ltd.	3 Pokiok Rd., Saint John	Saint John

DIRECTORY OF FIRMS—Continued

THE STONE QUARRYING INDUSTRY—Continued

Limestone—Continued

Name	Head office address	Location
QUEBEC—		
Amendements Calcaires de R-B, Les	Rivière-Bleue	Rivière-Bleue
Andorno, Jean (*)	Cap St. Martin	Cap St. Martin
Beaudry, J. P.	Joliette	Joliette
Beauregard, La Compagnie Ltd.	Stukely North	Stukely North
Bédard, Jean Ltée (*)	82-33rd Ave., Lachine	Caughnawaga
Boucher, Louis	Percé	Gaspé Co.
Boucher, Telesphore	Notre Dame de la Salette	Notre Dame de la Salette
Bouquet, John D.	De forceville	Gaspé Co.
Canada Cement Co. Ltd.	Box 290, Montreal	Hull
Canadian Quarries Co.	2251 Chemin de la Côte, St. Michel	St. Michel
Carrière Bernier Enrg.	R. R. 2, St. Jean	St. Jean
Carrière du Cap St. Martin	636 Ave. Querbes, Outremont	Cap St. Martin
Carrière Gravel Ltée	Chateau Richer	Chateau Richer
Carrière Pointe-Claire	Dorion-Vaudreuil	Beaconsfield
Carrière St. Barthelemi Ltée	St. Barthelemi	St. Barthelemi
Carrières de St. Dominique Ltée (*)	555-16th Ave., St. Hyacinthe	St. Dominique
Carrière St. Maurice Inc.	1497 Craig St., Trois Rivières	St. Louis de France
Carrière Trois Rivières Ltée	St. Louis de France	St. Louis de France
Charbonneau, L. & Cie	St. François de Sales	Laval Co.
Cie de Construction de Roberval Ltée	Roberval	Roberval
Construction de L'Est Enrg., Les	Iles de la Madeleine	Havre Aubert
Departement de la Justice (*)	Ottawa, Ont.	St. Vincent de Paul
Deschambault Quarry Corp. (*)	56 rue St. Pierre, Quebec	St. Marc des Carrières
Domaine Lime Ltd.	Lime Ridge	Lime Ridge
Durocher, Cyrille	11021 Notre Dame E., Montreal	Montreal East
Filion, Aldege	Lachute	Lachute
Fiset, Eliodore	St. Marc des Carrières	St. Alban
Fortin, Camille	Chambord Junction	Lac St. Jean
Fuger & Smith Ltd.	78 Victoria Ave., Pointe Claire	Pointe Claire
Gagné, Octave	St. Ulric	St. Ulric
Gagnon & Leclerc	St. Joachim	St. Joachim
Gaspesian Fertilizer Co.	Port Daniel E.	Port Daniel E.
Gauthier, J. O. (*)	St. Marc des Carrières	St. Marc des Carrières
Gosselin, Alphonse	St. Laurent	St. Laurent
Kennedy Construction Co. Ltd.	407 McGill St., Montreal	Actonvale
Lagace Quarry	130 Blvd. Labelle, L'Abord-à-Plouffe	L'Abord-à-Plouffe
Lakeshore Construction Co. Ltd.	137 Cartier Ave., Pointe Claire	Pointe Claire
Landry, J. P. A.	St. André, Matapédia	St. André
Langlois, Adjutor	St. Marc des Carrières	St. Marc des Carrières
Larouche, J. B.	Baie St. Paul	Baie St. Paul
Lasalle Quarry Ltd.	8413 Blvd. St. Michel, Montreal	Ville St. Michel
Laurentian Stone Co. Ltd.	195 Nicholas St., Ottawa, Ont.	Hull
Leclerc, J. J.	Drapeau	Drapeau
Martineau, La Cie de Pierre de Taille Ltée (*)	Box 10, Rosemont, Montreal	Pont Viau
McDonald, R. & Co. Ltd.	2020 Union Ave., Montreal	Wakefield
Mercure, Camille	555-16th Ave., St. Hyacinthe	St. Dominique de Bagot
Miner, R. H. Co. Ltd.	Room 719, Sun Life Bldg., Montreal	Belanger Village, St. Laurent
Ministère de la Voirie	Quebec	St. Charles de Bellechasse
Montreal Cut Stone Co. (*)	9301 rue Foucher, Montreal	St. François de Sales
Montreal Quarry & Cut Stone Co.	2020 Union Ave., Montreal	St. Michel
National Quarries Ltd.	6301 Park Ave., Montreal	Laval Co.
Paquette, Levis	Cap St. Martin	Cap St. Martin
Pelletier, Jos. E.	Ste. Anne des Monts	Gaspé N.
Pulverized Products Ltd.	4820 Fourth Ave., Rosemont	St. Armand
Rioux, Louis	Cowansville	Cowansville
St. Francis Rock Products & Equipment Ltd.	St. Laurent	St. Laurent
St. Laurent Stone Products & Supplies Ltd.	St. Laurent	St. Laurent
Salaberry de Valleyfield, La Cité	Valleyfield	Valleyfield
Shawinigan Chemicals Ltd.	Montreal	Bedford
Standard Lime Co. Ltd.	Joliette	St. Paul de Joliette
Syndicat Co-opératif de la Carrière de Ferme Neuve	Ferme Neuve	Ferme Neuve
Syndicat de Broyage de Lévis	St. Joseph de Lévis	St. Joseph de Lévis
Tanguay & Royer Enrg.	Ste. Justine	Ste. Justine
Trappe de N.D. de Mistassini, La	La Village des Pères (Roberval)	Mistassini
Tremblay, Napoléon	31 rue Joffre, Hull	Hull
Tremblay, Welley	Ste. Anne	Canton Tremblay
Turcotte & Asselin	370 Dorchester St., Quebec	Chateau Richer
Union des Carrières & Pavages Ltée	48 Second Ave., Quebec	Charlesbourg
Varin, Joseph	3275 Chemin St. Michel, St. Michel	St. Michel
Verreault, Elz. Ltée	194 du Pont, Quebec	Gifford
Viau, Paul	340 Blvd. du Havre, Valleyfield	Grande Isle
ONTARIO—		
Abitibi Power & Paper Co. Ltd.	408 University Ave., Toronto	Bucke Tp.
Bonter Marble & Calcium Co. Ltd.	Box 61, Marmora	Marmora
Bonter, W. F.	Malone	Malone
Brunner Mond Canada Ltd.	Canadian Bank of Commerce Bldg., Toronto	Anderdon Tp.
Canada Cement Co. Ltd.	Box 290, Montreal, Que.	Belleville
Canada Crushed Stone Ltd.	72 Sun Life Bldg., Hamilton	Dundas, Hagersville
Carleton Lime Products Co.	Box 26, Carleton Place	Ramsay Tp.
Chemical Lime Ltd.	Beachville	Beachville

DIRECTORY OF FIRMS—Continued

THE STONE QUARRYING INDUSTRY—Concluded

Limestone—Concluded

Name	Head office address	Location
ONTARIO—Concluded		
Chem-Ore Mines Ltd.....	156 Yonge St., Toronto.....	Bobcaygeon
Cook, J. S. Stone Quarries (*).....	Warton.....	Amabel Tp.
Gypsum, Lime & Alabastine, Canada, Ltd.....	Paris.....	Beachville, Hespeler
Hagersville Quarries Ltd.....	Hagersville.....	Hagersville
Haldimand Quarries & Construction Ltd.....	137 Wellington St. W., Toronto.....	Hagersville
Kingston Penitentiary.....	Box 22, Kingston.....	Kingston
Kirkfield Crushed Stone Ltd.....	2700 Dufferin St., Toronto.....	Kirkfield
Lapierre, M. C.....	1949-8th Ave. E., Owen Sound.....	Owen Sound
Law, R. E. Crushed Stone Ltd.....	Port Colborne.....	Port Colborne
Limestone Products Ltd.....	1109 Millwood Rd., Toronto.....	N. Orillia Tp.
Marlhill Mines Ltd.....	Thorold.....	Marlbank
McDonald, A. G.....	Bronte.....	Lake Ontario
McGinnis & O'Connor.....	394 King St., Kingston.....	Pittsburg Tp.
Mica & Stone Products.....	Bancroft.....	Bancroft
North American Cyanamid Ltd.....	Niagara Falls.....	Ingersoll
Ontario Rock Co. Ltd.....	2 College St., Toronto.....	Belmont Tp.
Pembroke, Town of.....	Pembroke.....	Pembroke
Queenston Quarries Ltd. (*).....	72 Sun Life Bldg., Hamilton.....	St. Davids
Verona Rock Products Ltd.....	Verona.....	Verona
Walker Bros.....	Box 586, Thorold.....	Stamford Tp.
Wehman, John.....	578 Division St., Kingston.....	Kingston Tp.
Welland Crushed Stone & Building Co.....	R.R. 2, Niagara Falls.....	Stamford Tp.
MANITOBA—		
Building Products & Coal Co. Ltd.....	111 Christie St., Winnipeg.....	Inwood
Tyndall Quarry Co. Ltd. (*).....	1591 Erin St., Winnipeg.....	Garson
Winnipeg, City of.....	223 James Ave., Winnipeg.....	Stoney Mountain
Winnipeg Supply & Fuel Co. Ltd.....	812 Boyd Bldg., Winnipeg.....	Moosehorn, Stonewall
ALBERTA—		
Errico, M.....	Cadomin.....	Cadomin
Loder's Lime Co. Ltd.....	Kananaskis, Exshaw P.O.....	Kananaskis
Summit Lime Works Ltd.....	Box 273, Lethbridge.....	Lethbridge
BRITISH COLUMBIA—		
Agassiz Lime Quarry.....	Box 178, Agassiz.....	New Westminster M.D.
Beale Quarries Ltd.....	744 West Hastings St., Vancouver.....	Van Anda
British Columbia Department of Highways.....	Victoria.....	Various
British Columbia Pulp & Paper Co. Ltd.....	Bank of Nova Scotia Bldg., Vancouver.....	Quatsino Sound
Canadian Pacific Railway Co.....	Montreal, Quebec.....	Golden M.D.
Consolidated Mining & Smelting Company of Canada Ltd.....	Trail.....	Grand Forks
Fernie, City of.....	Fernie.....	Fernie
Koeys Limestone Co.....	Namu.....	Koeys River
Pacific Lime Co. Ltd.....	602 Pacific Bldg., Vancouver.....	Blubber Bay

Marble

QUEBEC—		
Canadian Dolomite Co.....	Portage du Fort.....	Portage du Fort
MAB Ltée.....	77 Cremazie, Quebec.....	St. Joseph de Beauce
Missisquoi Stone & Marble Co. Ltd. (*).....	Philipsburg.....	Philipsburg
Orford Marble Co. Ltd. (†).....	65 Beaudet, St. Laurent.....	St. Laurent
ONTARIO—		
Silvertone Black Marble Quarries Ltd.....	328 Waverley St., Ottawa.....	St. Albert
Stockloser, K. & Son.....	Madoc.....	Madoc
White Star Mines.....	Haliburton.....	Eagle Lake
BRITISH COLUMBIA—		
Marble & Associated Products.....	507 Ellise St., Victoria.....	Malahat

Sandstone

NOVA SCOTIA—		
Fairview Crushed Stone Ltd. (†).....	637A Gottingen St., Halifax.....	Halifax
Wallace Quarries Ltd.....	Wallace.....	Wallace
NEW BRUNSWICK—		
Read Stone Company Ltd. (†).....	Sackville.....	Stonehaven
Smith, E. A. (*).....	Shediac.....	Shediac

DIRECTORY OF FIRMS—Continued

Sandstone—Concluded

Name	Head office address	Location
QUEBEC—		
Blais, Joseph.....	32 Mont-Marie Ave., Lévis.....	St. Romuald
Coté & Forbes.....	Matane.....	Matane
Gagnon, L. P.....	St. David de Lévis.....	St. David de Lévis
Peel Construction Co. Ltd.....	Brampton.....	Trois Pistoles
Rousseau, T. E.....	105 Côte de la Montagne, Quebec.....	New Carlisle
Sherbrooke, City of.....	Sherbrooke.....	Sherbrooke
Simard, Adjutor.....	Pointe-au-Pic.....	Pointe-au-Pic
Vezina, Joseph.....	St. Foy.....	St. Foy
ONTARIO—		
Austin Corner.....	Belfountain.....	Inglewood
Campbell Sandstone Quarries Ltd. (*).....	Box C19, Westboro.....	Bell's Corners
Martin, E.....	Glen Williams.....	Halton
Norton, A. W.....	Limehouse.....	Limehouse
Sinfield, E. W.....	Cheltenham.....	Terra Cotta
Sykes Quarries.....	Young St., Georgetown.....	Glen Williams
BRITISH COLUMBIA—		
Consolidated Mining & Smelting Co. of Canada Ltd.....	Trail.....	Kimberley

Slate

QUEBEC—		
Thermo Coal Compound.....	7465 St. Denis, Montreal.....	Granby
Williamson & Crombie.....	Kingsbury.....	Kingsbury
BRITISH COLUMBIA—		
Brown, O. M.....	1903 Lansdowne Rd., Victoria.....	Leachtown

PRODUCERS OF ROCK WOOL

Name	Address
Canadian Gypsum Company Ltd.....	Weston, Ontario
Canadian Johns Manville Co. Ltd.....	Asbestos, Quebec
Gypsum, Lime & Alabastine, Canada, Ltd.....	Caledonia, Ontario
Insulation Products Ltd.....	Todmorden, Toronto, Ontario
Spun Rock Wools Ltd.....	Thorold, Ontario
Elmac Company.....	Saint John, New Brunswick
Thermotex Insulation Ltd.....	Granite Falls, Burrard Inlet, British Columbia
Glacial Rock Insulation Ltd.....	Township 17, Moose Jaw, Saskatchewan

DIAMOND DRILLING CONTRACTORS

Name of firm	Head office address
Allard Bros.....	Val d'Or, Que.
Anderson, Anton.....	20 Patricia Blvd., Timmins, Ont.
Anderscheck, John M.....	61 Third Ave., Timmins, Ont.
Arno Diamond Drilling Co. Ltd.....	249 Algonquin Blvd. E., Timmins, Ont.
Baderski, Frank & Son.....	464 Algonquin Blvd. E., Timmins, Ont.
Baker, L. J.....	Box 520, Val d'Or, Que.
Bellis, W. E.....	Yellowknife, N.W.T.
Berube Diamond Drilling.....	Val d'Or, Que.
Blackburn & Rabb.....	Box 570, Rouyn, Que.
Bayles Bros. Drilling Co. Ltd.....	1291 Parker St., Vancouver, B.C.
Brochu, W. C.....	Room 2, Richardson Bldg., Timmins, Ont.
Brade & Smith Drilling Co. Ltd.....	Box 213, Red Lake, Ont.
Burry, Herbert.....	New Liskeard, Ont.
Burton, Archie S.....	352 Howey Crescent, Sudbury, Ont.
Chenette Drilling Reg'd.....	Box 462, Noranda, Que.
Connors, T. Diamond Drilling Co. Ltd.....	744 West Hastings St., Vancouver, B.C.
Continental Diamond Drilling Co. Ltd.....	82 Perreault St. W., Rouyn, Que.
Demorest Drilling Ltd.....	Noranda, Que.

DIRECTORY OF FIRMS—Continued

DIAMOND DRILLING CONTRACTORS—Concluded

Name of firm	Head office address
Dempsey & Watt.....	Box 72, Noranda, Que.
Dependence Diamond Drilling Co.....	Kirkland Lake, Ont.
Developers of Canada Reg'd.....	Box 78, Val d'Or, Que.
Eco Exploration Co. Ltd.....	711 McArthur Bldg., Winnipeg, Man.
Geraldton Diamond Drilling Co.....	Geraldton, Ont.
Globe Drilling & Exploration Co.....	Kenora, Ont.
Grondin, M.....	Box 2013, Val d'Or, Que.
Heath & Sherwood.....	6 Duncan Ave., Kirkland Lake, Ont.
Inspiration Mining & Development Co. Ltd.....	184 Bay St., Toronto, Ont.
Jones & Bradley Ltd.....	Drawer 1050, Noranda, Que.
Kelly, J. C.....	Yellowknife, N.W.T.
Kuntz, H. J.....	Box 300, Malartic, Que.
Labine Bros.....	McKenzie Island, Ont.
Lamothe, Charles & Sons.....	South Porcupine, Ont.
Lantz Diamond Drilling Co.....	204-4th St. N., Kenora, Ont.
LaRocque, T. E.....	10 Frontenac St., Val d'Or, Que.
Matheson Drilling & Exploration.....	Matheson, Ont.
Mikelait, J. A.....	Box 127, Rouyn, Que.
Morissette Diamond Drilling Ltd.....	Box 440, Haileybury, Ont.
McCall Diamond Drilling Co.....	Box B, Geraldton, Ont.
McIsaac, Roderick M.....	Box 356, Flin Flon, Man.
McGinn, J. R.....	5 Elgin St., Sudbury, Ont.
Napcar Diamond Drilling.....	20 Cherry St., Timmins, Ont.
National Diamond Drilling Co. Ltd.....	Box 508, Rossland, B.C.
Northern Diamond Drilling Co.....	711 McArthur Bldg., Winnipeg, Man.
Niemetz Bros.....	Red Lake, Ont.
Ontario Diamond Drilling Co. Ltd.....	203 Mackey Bldg., Sudbury, Ont.
Pacific Drilling & Exploration Co. Ltd.....	356 Alexander St., Vancouver, B.C.
Portelance, A.....	626 Leslie Ave., Port Arthur, Ont.
Prochik, M. J.....	McKenzie Island, Ont.
Robinson Contracting Co. Ltd.....	804-850 Hastings St. W., Vancouver, B.C.
Rowan, Angus.....	74½ Fifth Ave., Timmins, Ont.
Roy & LaRochele (*).....	Duparquet, Que.
Roy & Clermont (*).....	Rouyn, Que.
Roy Bros. Reg'd. (*).....	Malartic, Que.
Roy, J. M.....	B.P. 392, Malartic, Que.
Smith & Travers Co. Ltd.....	208 Walnut St., Sudbury, Ont.
Sudbury Diamond Drilling Co. Ltd.....	184 Bay St., Toronto, Ont.
Territories Exploration & Drilling.....	Box 149, Yellowknife, N.W.T.
Thompson Drilling & Mining Development Co. Ltd.....	4 North Ave., Flin Flon, Man.
Timmins Diamond Drilling Dev. Co. Ltd.....	174 Maple St. N., Timmins, Ont.
Traynor Diamond Drilling Co. Ltd.....	15 Toronto St., Toronto, Ont.
Tremblay, Paul E.....	Rouyn, Que.
Turcotte, R. Diamond Drill Reg'd.....	Box 478, Malartic, Que.
Wilson, A.....	Box 270, Noranda, Que.

(*) Firm dissolved.

FUEL WELL DRILLING CONTRACTORS

NOVA SCOTIA— Kennedy, O. V.....	Bridgetown
QUEBEC— Boileau, E.....	1080 Osborne St., Montreal
ONTARIO— Ashton, J. L.....	550 King St. W., Chatham
Culver, Marvin & Son.....	R.R. 2, Selkirk
Culver & Havill.....	Stevensville
Davidson, Fred L.....	Wingham
Dennis, G.....	R.R. 2, Selkirk
Dolphin Bros.....	Saulsby St., Strathroy
Elk Development Syndicate.....	R.R. 2, South Cayuga
Emerson, H. L.....	R.R. 1, Dunnville
Emerson & Rose.....	Wainfleet
Garringer, W.....	Dunnville
Harris, W.....	R.R. 3, Jarvis
Heal, A. A.....	Box 264, Watford
Hodgson Bros.....	Cayuga
Irving, D.....	509 Queen St., Dunnville
Jackson, P. L. & Co.....	211 George St., Dunnville
Kiser Bros.....	Hicks Bldg., Chatham
Lymburner Bros. & Webber.....	Dunnville
Mandley, R.....	Dunnville
McCutcheon, T. O.....	225 Broad St., Dunnville
McKillop, Wm.....	Box 102, Hamilton
McLister, J. J.....	Dunnville
McMaster, Robt. & Sons.....	Box 455, Caledonia
Matt, G. L. & Associates.....	Lynden
Nauman Bros.....	Fisherville
Patterson & Culver.....	Box 93, Dunnville

DIRECTORY OF FIRMS—Concluded

FUEL WELL DRILLING CONTRACTORS—Concluded

Name of firm	Head office address
ONTARIO—Concluded	
Patterson Gas Co. Ltd.	Jamestown, N.Y., U.S.A.
Perkins, J. E.	Dunnville
Renwick, S.	Bright
Shank Bros.	R.R. 2, Selkirk
Shaw, S. D.	120 Wellington St., Chatham
Stewart, E.	R.R. 3, Jarvis
Stubble, H. H.	225 Grand Ave. E., Chatham
Swayze & Nauman	R.R. 5, Simcoe
Swent, W. N.	Selkirk
Warren, G.	R.R. 1, Canboro
Werner, D. E.	Fisherville
Wilson-Sullivan Development Co.	112 S. Christina St., Sarnia
Windover, Wm.	R.R. 2, Sarnia
MANITOBA—	
Coyle, D. J.	796 McDermot Ave., Winnipeg
SASKATCHEWAN—	
Clark Drilling Co.	Wolsely
Creelman, R. E. & Son	1113 Ave. B North, Saskatoon
Northern Development Co. Ltd. (N.P.L.)	Lloydminster
ALBERTA—	
Alberta Drilling & Development Co. Ltd.	1 Central Bldg., Calgary
Can-Tex Drilling Co. Ltd.	617 Lancaster Bldg., Calgary
Commonwealth Drilling Co. Ltd.	4 Clarence Block, Calgary
Culbert, E. L.	Black Diamond
Drilling Contractors Ltd.	902 Lancaster Bldg., Calgary
G & C Drilling Co.	Millarville
General Petroleum Ltd.	509-8 Ave. W., Calgary
Kartmeyer, F.	Black Diamond
Machinery Depot Ltd.	1029-10th Ave. W., Calgary
Medhurst, R. P. & Sons	Foremost
McAllister, R. W.	527-1st Ave. W., Calgary
National Petroleum Corp. Ltd.	401 Leeson-Lineham Bldg., Calgary
Newell & Chandler Ltd.	203 Wilson Electric Bldg., Calgary
Regent Drilling Co. Ltd.	Vermilion
Roxana Oils Co. Ltd.	408 Lancaster Bldg., Calgary
Union Drilling & Development Co. Ltd.	403 Lancaster Bldg., Calgary

EXPLANATORY NOTES

Method of Computing Quantities and Values of the Mineral Production of Canada in 1945.

Arsenic.—White arsenic (As_2O_3) produced at Canadian plants at its sales value.

Bismuth.—(a) Recoverable metal in silver-lead-bismuth bullion shipped to foreign smelters for refining at an arbitrary price; (b) Bismuth metal produced at Canadian smelters valued at the average New York price for the year.

Cadmium.—Canadian refinery production valued at the amount received by shippers.

Cobalt.—Cobalt content of the various cobalt products sold by the Ontario smelter producing these products added to the cobalt content of ores and residues exported for treatment in foreign smelters; the value given is the gross amount received by the shippers.

Copper.—(a) Recoverable copper in ores and concentrates exported valued at the average New York price for the year, in Canadian funds; (b) Copper in blister copper made at Manitoba; Ontario and Quebec smelters valued at the average London price for the year in Canadian funds; (c) Copper in copper-nickel matte exported from Canadian smelters valued at an arbitrary price agreed upon between the Dominion Bureau of Statistics and the Ontario Department of Mines.

The price per pound used throughout 1945 to evaluate Canadian production was that agreed upon by the Canadian Producers and the British Government, with necessary adjustments.

Gold.—Gold in bullion produced and the recoverable gold in all other Canadian mine products is valued at the standard rate of \$20.671834 per fine ounce until the end of 1930. For succeeding years, unless otherwise specified, gold is valued at the average price on world markets transposed to Canadian funds.

Lead.—Recoverable lead in ores exported from Canada added to lead contained in base bullion made at Trail, B.C., valued at the average London quotations for the year in Canadian funds. The average price used for 1945 was that agreed upon by contract between Canadian producers and the British Government, with necessary adjustments.

Nickel.—(a) Refined and electrolytic nickel produced at Canadian refineries valued in Canadian funds at the average price obtained for such products sold during the year; (b) Nickel in oxides and salts sold from Canadian smelters and refineries at its total selling value in Canadian funds in the form in which it was sold; (c) Nickel in matte exported from Canada valued at an arbitrary figure agreed upon by the Ontario Department of Mines and the Dominion Bureau of Statistics (representative of the value of the nickel in matte form).

Platinum Group Metals.—Recoverable metals in smelter products and placer platinum at the average London price and transposed to Canadian funds.

Silver.—Silver bullion produced and the recoverable silver in other primary plant products, and the recoverable silver in Canadian ores exported, at the average New York price for foreign ores in Canadian funds for the refined metal.

Tellurium and Selenium.—Refinery production valued at the average New York price for the year.

Zinc.—Refined zinc produced by the Consolidated Mining and Smelting Co., Ltd., at Trail, B.C., and by the Hudson Bay Mining and Smelting Co., Ltd., Flin Flon, Manitoba, and the recoverable zinc in concentrates exported, valued at the average monthly price quoted in London, in Canadian funds.

The average price used for 1945 was that agreed upon by contract between Canadian producers and the British Government, with necessary adjustments.

Coal.—Output tonnage evaluated pro rata according to income from sales.

Other Non-Metallic Minerals, Clay Products and Structural Materials.—Shipments during the year at their respective sales values.

Imports.—Statements and quantities and values are based on the declarations of importers, as subsequently checked by government officials.

The value of imported merchandise is the fair market value or the price thereof when sold for home consumption in the principal markets of the country whence and at the time when the same were exported directly to Canada. The price and value of the goods in every case are stated as in condition packed ready for shipment, the fair value being shown in the currency of the country of export, and the selling price to the purchaser in Canada shown in the actual currency in which the goods were purchased. In the case of goods that are the manufacture or produce of a foreign country, the currency of which is substantially depreciated, the value stated is the value that would be placed on similar goods manufactured or purchased in the United Kingdom and imported from that country, if such similar goods are made or produced there. If similar goods are not made or produced in the United Kingdom, the value stated is the value of similar goods made or produced in any European country, the currency of which is not substantially depreciated.

Exports.—Statements of quantities and values are based on the declaration of exporters as subsequently checked by government officials.

The value of exports of Canadian merchandise is the actual cost or the value at the time of exportation at the points in Canada whence originally shipped.

Weight.—Weight, where shown in imports and exports is the net weight of the goods, excluding the weight of the covers or receptacles, except in the cases of certain goods, as provided in the tariff.

The expression "ton" means 2,000 pounds, and cwt. 100 pounds, avoirdupois. Where other units of quantity are used, imperial standards apply.

Unless otherwise arranged, the data relating to the operations of less than three firms producing the same commodity or mineral are not published separately.

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CANADA—DEPARTMENT OF TRADE AND COMMERCE
DOMINION BUREAU OF STATISTICS
MINING, METALLURGICAL AND CHEMICAL SECTION

MINERAL PRODUCTION OF CANADA

1946

CHRONOLOGICAL RECORD, 1604-1947
HISTORICAL PRODUCTION TABLES, 1886-1946

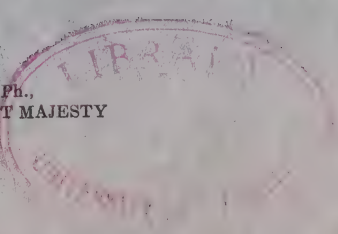
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OTTAWA
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PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
CONTROLLER OF STATIONERY

1949

Price, \$1.00



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PREFACE

Annual reports on the Mineral Production of Canada have been published since 1886. The first reports were prepared by the Geological Survey of Canada, later by the Mines Branch of the Department of Mines, and since 1921 by the Dominion Bureau of Statistics. Historical tables and a chronological record of important events are included as a feature of this report.

The present report contains final data on the production from Canada's metal and non-metal mines and quarries, oil and gas wells, and plants producing lime, products from Canadian clays, and cement. It contains tables showing the salaries and wages paid, the number of employees, the amounts spent on fuel and power, the power-producing equipment installed, and the process supplies purchased.

The report is divided into ten chapters; the first is a complete summary, and the remaining chapters conform to the nine major groups into which the Canadian mining industry is divided. A list of all mining companies which reported to the Bureau for 1946 is added.

The total value of the mineral production of Canada, as shown in this report, includes all metals and minerals with the exception of those obtained from pitchblende ores which are confidential.

As in previous years, the Bureau co-operated with the Mines Departments of the provinces of Nova Scotia, Quebec, Ontario, Manitoba, Saskatchewan and British Columbia in the collection of these statistics. Forms were filed in duplicate by the reporting companies, thereby saving the operator extra work, and resulting in uniform totals for Dominion and Provincial statistical bureaux.

The thanks of the Bureau are tendered to the Dominion Department of Mines and Resources and to the mine and smelter operators for assistance given and information made available. Railway and other transportation companies, as well as smelter operators outside of Canada, have also furnished data, the receipt of which is gratefully acknowledged.

This report has been prepared by Mr. A. R. Deir, Mining Statistician.

HERBERT MARSHALL,
Dominion Statistician.

DOMINION BUREAU OF STATISTICS,
Ottawa, July 22, 1948

CANADA — DEPARTMENT OF TRADE AND COMMERCE
DOMINION BUREAU OF STATISTICS
MINING, METALLURGICAL AND CHEMICAL SECTION

CHRONOLOGICAL RECORD OF CANADIAN
MINING EVENTS FROM 1604 TO 1947

AND

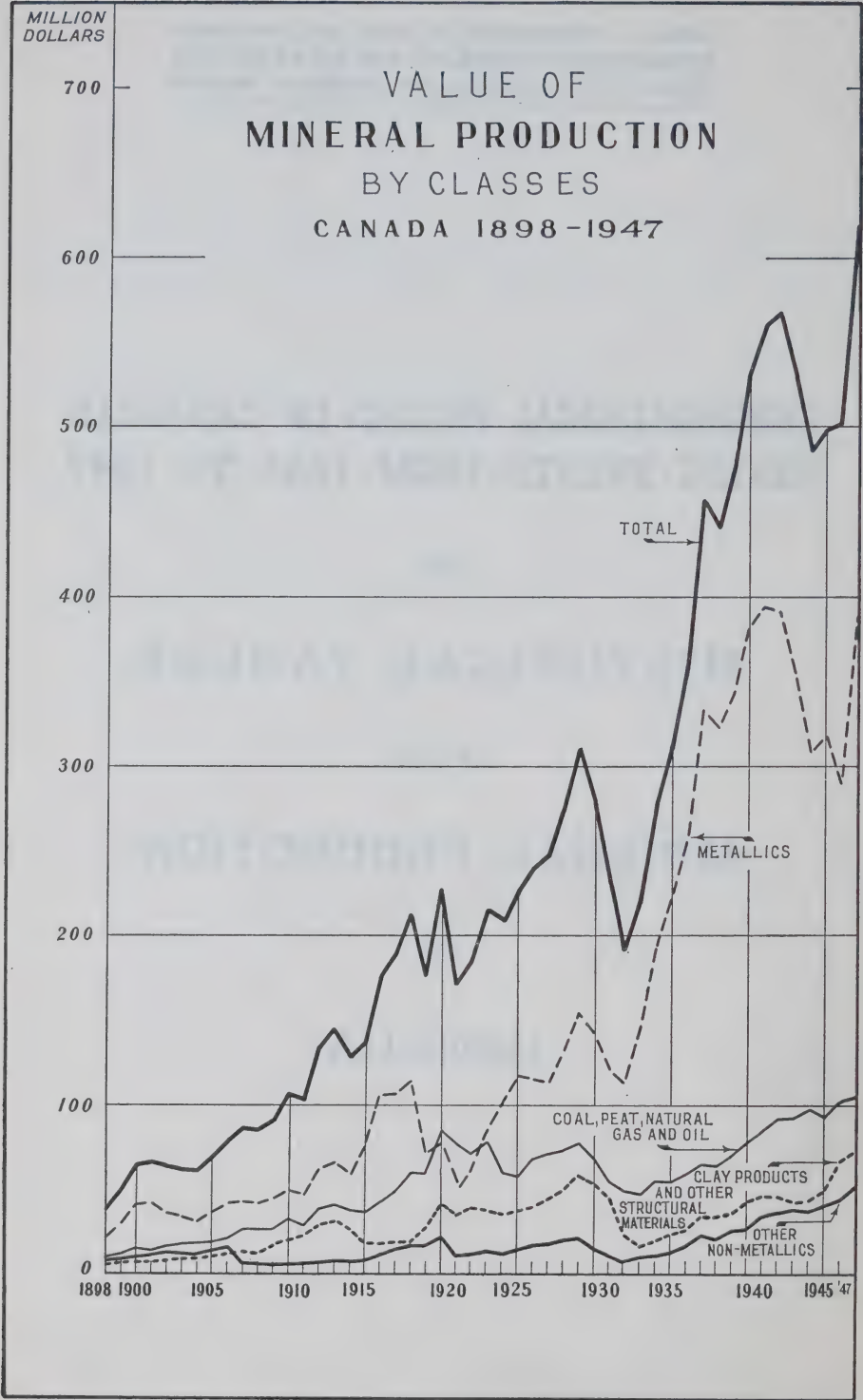
HISTORICAL TABLES

OF THE

MINERAL PRODUCTION

OF

CANADA



DOMINION BUREAU OF STATISTICS

HERBERT MARSHALL, Dominion Statistician
W. H. LOSEE, Director, Industry and Merchandising Division
H. McLEOD, Chief, Mining, Metallurgical and Chemical Section

CHRONOLOGICAL RECORD OF CANADIAN MINING EVENTS, 1604—1947.

Year

- 1604—Discovery of iron and silver reported at St. Mary's Bay, Nova Scotia, by Master Simon, a mining engineer accompanying Champlain. Native copper was also reported to have been found at Cap d'Or.
- 1612—Sir Thomas Button entered Nelson River.
- 1654—Louis XIV granted a concession to Nicholas Denys to mine gold, silver, copper and other minerals on Cape Breton Island.
- 1672—Nicholas Denys reported the discovery of coal on Cape Breton Island.
- 1677—Intendant of New France, M. Duchesneau, proclaimed the imposition of a royalty of 20 sous per ton on coal mined in Cape Breton.
- 1711—Admiral Walker obtains coal in Cape Breton.
- 1720—First coal produced in Canada by regular mining methods on north side of Cow Bay, Cape Breton, N.S.
- 1724—Coal was exported from Cape Breton to Boston.
- 1732—La Verendrye reached Lake Winnipeg.
- 1737—Iron ores smelted on St. Maurice river, Quebec, by Cugnet & Cie. or "La Compagnie des Forges".
- 1744—Publication of Bellin's map showing existence of silver-lead ores on Lake Temiskaming, Quebec, now known as the Wright mine.
- 1754—Hendry reached Saskatchewan River from Hudson Bay.
- 1770—Jesuit Fathers experimented with native copper found at Point Mamainse, north shore Lake Superior.
- Alexander Henry, English trader, formed a mining company, in which the Duke of Gloucester and other prominent Englishmen were partners, to develop minerals near Sault Ste. Marie, Ontario.
- 1771—Samuel Hearne, Hudson's Bay clerk, prospected the Copper Mine River area, Northwest Territories, for copper.
- 1779—Earliest recorded gypsum mining operations by settlers, Nova Scotia.
- 1782—Coal mined in vicinity of Grand Lake, New Brunswick.
- 1784—Government commenced systematic coal mining on northwest shore of Sydney Harbour, N.S.
- 1789—Sir Alex. MacKenzie discovers coal on Great Bear River, Northwest Territories.
- 1800—First iron furnace in Ontario erected in Leeds county at Furnace Falls (Lyndhurst) by D. Sherwood, S. Barlow, W. Sutherland and E. Jones.
- David Thompson discovers coal on Saskatchewan river.
- 1813—Blast furnace erected by John Mason at Normandale, Norfolk county, Ontario, used unsuccessfully in treating bog ores.
- 1820—Blast furnace erected in Marmora twp., Hastings county, Ontario, by Mr. Hayes.
- 1822—First record of gypsum mining in Ontario, near Paris.
- Normandale iron furnace commenced successful iron smelting operations in Ontario under Mr. Van Norman.
- 1823—Placer gold discovered on Chaudière River, Quebec, by a woman.
- First gypsum mill operated in Ontario.
- 1826—General mining association formed in Nova Scotia.
- 1829—Lièvre river apatite deposits in Quebec discovered.
- 1830—First mining shaft in Nova Scotia sunk on Sydney main coal seam.
- 1835—Coal discovered at Suquash, Vancouver Island, through information supplied by Indians.
- 1840—First hydraulic cement made in Canada at Hull, Quebec.
- 1843—Geological Survey of Canada instituted under Sir Wm. Edmund Logan.
- 1846—Silver veins reported in vicinity of Thunder Bay, Lake Superior.
- Ascanio Sobrero, Italian, first makes nitroglycerine.
- Oil seepages reported on Gaspé Peninsula by Sir Wm. Logan.
- 1847—Normandale iron furnace in Ontario shut down owing to lack of ore and fuel.
- First mention of copper ores in Eastern Townships, Quebec, in Geological report, 1847-48.
- Gypsum mining operations commenced near Hillsborough, New Brunswick.
- 1848—Montreal Mining Company commenced mining at Bruce Mines, Ontario.
- 1850—Indians located Douglas coal seam at Nanaimo, B.C.
- 1852—August 24, J. W. McKay, Hudson's Bay Co. factor sent by James Douglas from Victoria to take possession of Nanaimo coal field and collect royalty from users of coal.
- Free gold discovered in quartz at Mitchell harbour, Queen Charlotte Islands, causing the first auriferous quartz rush in British Columbia.
- 1853—March 26, Governor Douglas, Victoria, as Lieutenant Governor of Queen Charlotte Islands, Crown Colony, issued the first proclamation relating to mining in British Columbia.
- 1855—Placer gold found at the mouth of Pend d'Oreille River, B.C., by ex-servants of the Hudson's Bay Company at Fort Colville.

- 1857—Sir James Hunter located coal on Souris river, Manitoba.
Placer gold reported at the junction of the Fraser and Thompson rivers, B.C.
December 28, James Douglas issued proclamation regarding working of gold mines located chiefly in the Kamloops, Ashcroft, and Vernon areas of British Columbia.
- 1858—Introduction of Canadian decimal currency.
Legislature of Nova Scotia obtained possession and control of mines and minerals of province.
First producing oil well on American continent opened in Lambton county, Ontario.
Discovery of placer gold in the lower reaches of the Fraser river, B.C., caused rush to Yale, Hope and Canyon by miners from California and other foreign parts.
- 1859—Passage of the Goldfields Act, British Columbia, Sept. 7.
Placer miners penetrate to Cariboo and Quesnel, B.C.
Canadian silver coinage issued.
- 1860—John Pulsiver discovered gold in Tangier district, Halifax county, N.S.
First drilling for oil in Gaspé, Quebec.
Pete Toy bar discovered at the Parsnip and Findlay rivers, B.C.
Crushing plant erected at Wellington Copper Mine, Ontario.
- 1861—Gold discovered in Oldham district, Halifax county, N.S.
- 1862—Gold discovered in Lawrencetown, Isaacs Harbour and Renfrew districts, N.S.
- 1863—Miners from State of Washington ascending the Kootenay, established Wildhorse Creek diggings, B.C.
Issue of a comprehensive Geology of Canada under Sir William Logan.
- 1864—Placer gold located on Leech Creek, B.C.
Copper claims staked on Howe Sound and Knight Inlet.
- 1865—Dewdney trail completed to Wildhorse from Hope, B.C., to enable gold escorts to reach Victoria on British territory.
Placer claims staked on Big Bend area of Columbia river, B.C., by former Cariboo miners.
Gold discovered in Mount Uniacke district, Nova Scotia.
Eustis mine opened in Eastern Townships, Quebec.
- 1866—First discovery of gold in Canadian Pre-Cambrian shield near Madoc, Hastings county, Ontario, known as Richardson mine, made by a Dutch prospector named Powell and associates. Thos. McFarlane discovered high grade silver ores in Ontario on an island in Lake Superior. (Silver Islet mine.)
First recorded production of salt in Ontario, near Maitland river.
- 1866—Alfred Bernard Nobel discovered the method of making dynamite.
- 1869—Gold discovered in Fifteen Mile Stream district, Nova Scotia.
Gold discovered in Yukon river.
Salt produced at Seaforth, Ontario.
Transfer of Hudson's Bay Company Lands (Rupert's Land) to Dominion of Canada.
- 1870—First commercial shipments of apatite in Canada made from North Burgess twp., Ontario.
Montreal Mining Company sold Lake Superior mining lands, including Silver Islet.
- 1871—First recorded production of soapstone in Quebec from Bolton twp., Brome county.
Dominion Lands Survey Branch created.
Huronian mine (Moss) N.W. Ontario, located by Peter McKellar on advice of an Indian.
First staking of silver ores on Eureka Mt., near Hope, B.C.
- 1873—Dease Lake areas, B.C., staked for placer gold, first staker W. H. Smith.
Omineca placer mining area began to open up and Manson creek settlement established.
- 1877—Geological Survey of Canada recognized by Act of Parliament.
- 1878—Asbestos first mined in Quebec by Andrew Johnston (Johnston Asbestos Co.).
Gold discovered at Lake of the Woods, Ontario.
- 1879—Coal fields of the Crow's Nest Pass, B.C., opened.
- 1880—Geological Survey offices and museum moved from Montreal to Ottawa.
- 1881—Quebec Technical Mines Branch formed as division of Crown Lands Department.
Zenith zinc mine discovered, Nipigon district, Ontario.
- 1883—Copper-nickel ores discovered near Sudbury (Murray mine) by Thos. Flanagan.
Miners penetrated into the West Kootenay district, British Columbia, locating mines on Kootenay river and Kootenay lake.
- 1884—Worthington mine, Sudbury area, Ontario, discovered by F. C. Crean.
Silver Islet mine, Lake Superior, abandoned.
Kingdon lead mine deposits, Carleton county, Ontario, worked.
Thos. Frood and A. J. Cockburn discovered Frood mine, Sudbury area, Ontario.
Renaldo McConnell discovered copper-nickel ore in Snyder twp., Ontario.
- 1885—Samuel J. Ritchie organized Canadian Copper Company.
Copper Cliff mine, Ontario, discovered.
Henry Ranger located Creighton mine, Sudbury area, ore deposit first noted by Surveyor Salter and Geologist Murray.
- 1885—Canadian Pacific Railway completed.
John Chance staked Granite Creek placer deposits in British Columbia.
Cayoosh Creek placers staked in British Columbia.
James Stobie discovers Stobie mine, Sudbury area, Ontario.
- 1886—First shipments of coal from Lethbridge area, Alberta.

- 1886—First complete statistical returns issued by Geological Survey of Canada.
Incorporation of Canadian Copper Company.
First stakings in Boundary Creek area, British Columbia, by W. T. Smith.
First officially recorded Canadian mica production in Ontario and Quebec.
Stobie and Evans mines, Sudbury district, opened.
- 1887—R. W. MacArthur and Wm. Forest discovered cyanide process for gold extraction, at Glasgow, Scotland.
- 1888—Asbestos first mined in Quebec by Scottish Canadian Asbestos Co.
Coal discovered near Banff, Alberta.
Coal mining commenced at Canmore, Alberta.
First smelter blown in at Copper Cliff, Ont., December 24th.
Monarch mine on Canadian Pacific Railway at Field, B.C., opened.
Discovery of natural gas in Essex county, Ontario.
- 1889—Levack mine, Sudbury area, Ontario, discovered by James Stobie.
H. H. Vivian and Company of Swansea, Wales, started organized mining operations in Sudbury area.
Discovery of Leamington gas field in Ontario.
James Riley, Glasgow engineer, discovered the hardening and toughening effect of nickel in steel making.
Rossland Camp at head of Trail Creek, B.C., opened by staking of Lily May by Joe Bourgeois.
- 1890—Coal first mined in Turtle Mountain field, Manitoba. Vaden mine.
First smelter blown in at Murray mine, Sudbury. Matte shipped to Wales.
- 1891—First shipments from Rossland, B.C., to Colorado Smelting Works, Butte, Montana.
Sultana mine, Lake of Woods district, Ontario, opened, closed 1906.
The United States navy concluded successful experiments using nickel-steel for the first time as armour plate.
Bureau of Mines, Ontario, organized.
Garson Mine, Sudbury, discovered by John T. Cryderman.
- 1892—Col. R. M. Thompson developed the Orford nickel-copper separation process.
Dr. Ludwig Mond developed the Mond copper-nickel separation process.
Sullivan camp, B.C., commenced by staking of the Hamlet, etc., claims by Pat Sullivan, John Cleaver, E. C. Smith and W. C. Burchett.
- 1893—Kneehills coal mines, Alberta, opened.
Mikado mine, Lake of Woods district, Ontario, discovered.
- 1894—Pilot Bay smelter constructed and silver-lead-zinc mines of Ainsworth and Slocan, B.C. became active.
- 1895—Sullivan mine, B.C., commenced shipping.
- 1896—Salt produced in Dauphin Lake district, Manitoba; sold to settlers.
Iron ore bounties inaugurated.
Black Donald graphite mine, Renfrew county, Ontario, discovered and operated in 1897.
Discovery of placer gold in Klondike, Yukon Territory
Hall mines smelter at Nelson, B.C., opened.
Iron Mask staked August 13 at Kamloops, B.C., by Geo. Breedson.
B.C. Smelting and Refining Company started smelting Rossland ores at Trail in February—Promoters: D. C. Corbin and August Heinze.
- 1897—Pioneer mine, B.C., located September 6, by Wm. Allen.
- 1898—Atlin goldfields, B.C., discovered by prospectors turning aside from the Klondike gold rush; Rainy Hollow copper deposits discovered in same manner.
- 1898—Pioneer and other claims staked on Cadwallader Creek, B.C.
Britannia mine deposits, B.C., discovered by Oliver Furry.
- 1899—Helen iron mine, Ontario, opened by Algoma Steel Corporation.
Frood mine, Sudbury, opened.
Sunset claim, Copper Mountain, B.C., staked.
Granby Consolidated Mining, Smelting and Power Co., B.C., incorporated.
- 1900—Mond Nickel Company incorporated.
Corundum mining commenced in Renfrew county, Ontario.
Klondike gold production reaches maximum.
Nova Scotia Steel and Coal Co. acquire Sydney coal mines of General Mining Association.
Granby Smelter at Grand Forks, B.C., started April 1st.
Bonanza mine, Observatory Inlet, B.C., discovered by Donahue and H. C. Flewin.
Smelter at Greenwood Camp, B.C., blown in on August 21.
Talc mining started in Hastings county, Ontario.
- 1901—First wells drilled for natural gas in Medicine Hat field, Alberta.
Creighton mine, Sudbury area, commenced production.
Crofton smelter, B.C., started.
Britannia mine, B.C., started shipping concentrates to Tacoma.
Production of aluminum, Shawinigan Falls, Quebec.
Hidden Creek mine, Observatory Inlet, B.C., discovered by McMillan, Rudge and H. C. Flewin.
Boundary Falls smelter, B.C., started.

- 1901—Tyee smelter, B.C., started.
First active development of gypsum deposits in Manitoba, the Manitoba Union Mining Company erecting a crushing and calcining mill on Portage Bay.
- 1902—Incorporation of International Nickel Company of New Jersey.
Marysville smelter, B.C., constructed.
Electrolytic lead (Betts process) made at Trail, B.C.
- 1903—High grade silver-cobalt minerals discovered at Long Lake, later known as the Cobalt Camp, Temiskaming district, Ontario.
St. Anthony mine, Sturgeon Lake, commenced producing.
Settlement of Alaska Boundary dispute.
Mining commenced at Hedley, B.C.
First recorded natural gas production in Alberta.
- 1904—Nipissing Mines incorporated.
La Rose Mine, Cobalt, started producing.
W. G. Trethewey located Trethewey mine, Cobalt, Ont.
Coniagas mine located, Cobalt, Ont.
Copper-gold ores discovered in Chibougamou district, Quebec.
- 1905—Atikokan iron mine, Ontario, equipped for production.
Buffalo mine, Cobalt, Ont., started operating.
First recorded shipment of Canadian fluorspar, Madoc, Ont.
Original test work on cyaniding cobalt ores in Canada carried out at School of Mining, Kingston, Ont. Mining commenced at O'Brien mine, Cobalt, Ont.
- 1906—January 18th. Consolidated Mining and Smelting Co. of Canada incorporated.
Ontario Mining Act passed.
Discovery of gold by Ollier and Renault on Lake Fortune (Lake Fortune Mine), Quebec.
Silver discovered at Elk Lake, Ontario.
Gold discovered at Larder Lake, Ontario. Kerr-Addison, Chesterville, Dr. Reddick, Larder Lake Proprietary, Harris-Maxwell and many other properties staked.
First electrical mining equipment used in Canada installed at Creighton mine, Sudbury district, Ontario.
- 1907—Silver discoveries at Gowganda, Ont.
Silver discovered in South Lorraine, Ont.
Supplementary Revenue Act imposes tax on mining profits in Ontario.
Federal Department of Mines created under a Minister of Mines.
Silver and arsenic produced at Deloro, Ont., from silver-cobalt-nickel-arsenic ores of the Cobalt district of Ontario.
- 1908—First gold discovery in Porcupine area, Ontario, by H. F. Hunter.
Gold mills operated in Larder Lake District at Harris-Maxwell, Larder Lake, Proprietary and Dr. Reddick properties; district was later dormant for several years.
First silver production from South Lorraine, Ont.
Branch of Royal Mint established at Ottawa, Ont.
First shipments of magnesite from deposits in Grenville twp., Quebec.
- 1909—Hollinger mine gold veins discovered by Benjamin Hollinger, John Miller and Alex. Gillies.
McIntyre mine veins, Porcupine, Ont., discovered by Alex. McIntyre.
Dome mine deposits, Porcupine, Ont., discovered by John Wilson and associates.
Cyaniding of low grade ores commenced at O'Brien mine, Cobalt, Ont.
- 1910—Premier mine, B.C., discovered by Bunting Bros. and Wm. Dilworth.
Mixed nickel and cobalt oxides produced at Deloro, Ont.
- 1911—First gold discovery in vicinity of Kirkland Lake, Ont., made by W. H. Wright on what is now known as the Wright-Hargreaves mine.
Porcupine camp destroyed by fire with heavy loss of life.
Discovery of gold by J. J. Sullivan and H. Authier in Dubuissou twp., Quebec.
First recorded discovery of gold in Manitoba by Major E. A. Pelletier at Rice Lake.
First shipment of British Columbia gypsum used in cement manufacture.
Victoria Memorial Museum, Ottawa, completed.
Black Cobalt Oxide and Grey Cobalt Oxide first marketed from Deloro, Ont.
- 1912—Hollinger mine, Porcupine, commenced first milling operations.
Low grade cyanide process installed at Nipissing mine, Cobalt.
Copper Mountain claims, B.C., taken over by British Columbia Copper Co.
Natural gas production commenced in Stoney Creek field, New Brunswick.
Harry Oakes staked ground later known as Lake Shore Mine at Kirkland Lake, Ont.
- 1913—Tough-Oakes mine, Kirkland Lake camp, Ontario, shipped high grade cobbled ore.
Gold discovered on Kirkland Lake properties known later as Lake Shore, Teck-Hughes, Kirkland Lake and Sylvanite mines.
Smelting of nickel ores commenced by Mond Nickel Co. at Garson, Ont., May 15.
Incorporation of British America Nickel Co., Ltd.
- 1914—Supplementary Revenue Act in Ontario changed to The Mining Tax Act.
Doctor T. O. Bosworth staked petroleum claims at Fort Norman, N.W.T.
Granby copper smelter, at Anyox, B.C., blown in.
Cyanidation first used in Kirkland Lake camp, at Tough-Oakes mine.
- 1915—Siscoe mine claims staked in Quebec by S. E. Siscoe.

- 1915—Flin Flon ore deposits discovered by Thos. Creighton representing the Hammell-Currie-Fasken syndicate.
Mandy mine, Manitoba, discovered.
- 1916—Construction commenced on nickel refinery at Port Colborne, Ont.
Incorporation of International Nickel Co. of Canada.
Falconbridge Nickel deposits, Sudbury district, Ontario, later known as Falconbridge Nickel Mines, discovered by drilling.
Pioneer mine, B.C., commenced drilling operations.
Electrolytic refined copper and zinc first produced at Trail, B.C.
- 1917—Teck Hughes mine, Kirkland Lake, started milling.
Mandy mine, Man., produces.
- 1918—Tough-Oakes mine temporarily closed.
Refined nickel produced in Canada at Port Colborne plant of International Nickel Co.
Premier mine, B.C., came into production.
- 1919—Lake Shore, Wright-Hargreaves, and Kirkland Lake mills commenced operations.
Ontario Department of Mines formed.
Smelter of British America Nickel Co. at Nickelton, Ont., and refinery at Deschenes, Que., commenced operations.
L. Beauvet discovered silver-lead ores at Keno Hill, Mayo district, Yukon.
First salt shipments from Malagash deposits in Nova Scotia.
- 1920—Rock salt discovered at Fort McMurray, Alberta.
The first well, Discovery No. 1, drilled at Fort Norman, N.W.T., by the Imperial Oil Company Ltd., petroleum found at 783 feet.
Mandy mine, Manitoba, suspends operations.
- 1921—Noranda ore deposits, Quebec, staked by Ed. Horne.
First shipment of silver-lead ores from Mayo, Yukon.
Rubber mill liners used at Nipissing mill, Cobalt, Ont.
- 1922—Amulet mine claims, Quebec, staked by McDonough Bros.
Rod mills appeared as milling equipment in Canadian mining plants.
Drilling commenced in Wainwright oil field.
- 1923—Granada mine claims, Rouyn, Quebec, staked by R. C. Gamble et al.
Sherritt-Gordon ore deposit staked by Carl Sherritt and Phillip Sherlett in January.
Red Coulee well first to reach oil in Sunburst formation, southern Alberta.
- 1924—British America Nickel Co. went into liquidation.
Royalite No. 4 well, Turner Valley, Alberta, brought into production.
Lithium ore discovered near Pointe du Bois, Manitoba.
- 1925—Discovery of gold in Red Lake district by Lorne Howey on what was later known as the Howey mine.
Silver-lead ores milled at Wernecke, Yukon.
Waite-Ackerman-Montgomery mine claims staked by H. Montgomery.
Allenby Copper Company took over Copper Mountain claims in August and shipped concentrates to Trail, B.C.
- 1926—Aluminum first produced at Arvida, P.Q., by Aluminum Company of Canada.
Falconbridge Nickel Mines incorporated.
- 1927—Noranda mine commenced shipping; smelter operated for first time.
Central Manitoba mine operated mill for first time.
Sherritt-Gordon mines incorporated in Ontario, July 5.
- 1928—Collapse of Worthington mine.
Waite-Ackerman-Montgomery mine started shipping.
Merger of Mond and International Nickel Companies.
Coniaurum mill, Porcupine camp, Ontario, commenced production in July.
March mine, Porcupine camp, Ontario, came into production.
Disastrous underground fire, in February, at Hollinger mine, Porcupine camp, Ontario, 39 lives lost.
Argonaut and Associated Goldfields suspended gold mining operations in Ontario.
Tough-Oakes-Burnside mine closed November 28.
- 1929—Red Coulee field, Alberta, began petroleum production.
Siscoe gold mine, Quebec, started production.
New 300 ton mill of Monarch mine, B.C., started producing.
Dome mine mill, Porcupine camp, Ontario, destroyed in October by fire.
New surface plant at Frood mine, Sudbury, Ont., placed in operation.
McIntyre mine, Porcupine, Ontario, erected small flotation plant.
- 1930—Gold discovered in Bannockburn township, Ontario, on what was later known as the Ashley mine.
Mill installed on Minto mine, Michipicoten, Ont.
New mill at Howey mine, Red Lake, Ont., commenced operations April 2.
Silver-radium ores discovered by G. Labine at Great Bear Lake, N.W.T.
Granada mine, Quebec, commenced production.
Manitoba, Saskatchewan and Alberta took over natural resources from Federal Government.

- 1930—Island Falls power plant, Manitoba, operated for first time, June 1.
 First refined zinc produced in November at Flin Flon, Manitoba, by Hudson Bay Mining and Smelting Co.
 First blister copper produced at Flin Flon, Manitoba, in December.
 New smelter of International Nickel Co. blown in at Copper Cliff, July 1.
 New electrolytic copper refinery of Ontario Refining Co. placed in operation at Copper Cliff, Ont.
 New Falconbridge Nickel Mines smelter blown in February 4.
 Bismuth first produced at Trail, B.C.
 Fuming plant constructed at Trail, B.C., for recovery of lead and zinc.
 Copper Mountain Mine, B.C., closed down November 15.
 Canada attained position of the world's second greatest gold producer.
 Nitre cake and sulphuric acid produced regularly in new plant of Canadian Industries Limited at Copper Cliff, Ont.
 First discovery well drilled in Red Coulee Field, Alberta.
- 1931—Toburn (Tough-Oakes) mine, Kirkland Lake, re-opened.
 Lake Shore mine, Kirkland Lake, Ont., installs 200 ton flotation unit in mill.
 Gold discoveries made in Swayze and Three Duck Lake areas, Ontario.
 Parkhill and Minto mines in Michipicoten district, Ontario, came into production.
 Gold discovered at Island Lake, Manitoba.
 Commercial production of fertilizer commenced at Trail, and smoke claims against Consolidated Mining and Smelting Company settled.
 Nipissing Mining Company, Cobalt, Ont., ceased mining silver-cobalt ores.
 Selenium produced for the first time in Canada by Ontario Refining Co. Ltd.
 Mining Corporation discontinued mining in South Lorraine, Ont.
 Keeley Silver mine, South Lorraine, Ont., closed.
 Canadian Copper Refiners Ltd., operated new copper refinery at Montreal East, Quebec.
 Regular production commenced by Sherritt-Gordon mill, Manitoba, April 1st.
 Equalization exchange premiums paid by Dominion Government to gold miners.
 Exports of gold bullion without licence prohibited by Dominion Government.
 Great Britain went off the gold standard on September 21, and was followed by many other countries.
 Big Missouri Mine, B.C., operated pilot mill.
 Nickel Plate mine, Hedley, B.C., closed down.
 Orford process plant completed at Copper Cliff, Ont.
 Copper converters at Port Colborne, Ont., closed down in August, preparatory to transferring Orford process to Copper Cliff.
 New Brunswick Power Commission plant came into operation in September, using Minto coal.
 Test shipments of Ontario lignite from Onakawana deposits, made to Germany.
- 1932—Ashley mine, Ontario, commenced gold production in October.
 Kenty mine in Swayze area, Ontario, sank two shafts.
 O'Brien Cadillac mine, Quebec, commenced gold milling.
 Sherritt-Gordon, Manitoba, suspended mining operations in June.
 San Antonio gold mine, Manitoba, commenced production in May.
 Beattie gold mines, Quebec, commenced construction of mill.
 Treadwell Yukon Mining Co. commenced production of gold in new mill on Bussière claims in Quebec.
 The United States imposed duty of 4 cents per pound, in June, on foreign copper.
 McLeod River Mining Corporation operated gold dredge near Peers, Alberta.
 Salt produced commercially for first time at Neepawa, Manitoba.
 First commercial shipment of silver-radium ores from Great Bear Lake, N.W.T., silver ores being smelted at Trail, B.C.
 Silver reached a record low of 24.5 cents in New York, December 29.
 Eldorado Gold Mines commenced treatment of radium-bearing ores in new plant at Port Hope, Ont.
 Moss mine, Thunder Bay district, Ontario, commenced gold production.
 Mill at Bralorne mine, British Columbia, placed in operation.
 Gold discovered at God's Lake, Manitoba.
 Domestic copper sold in the United States, December 6, at 5 cents per pound, Connecticut, an all time low for the metal.
 First officially recorded statistics of metal production for Saskatchewan.
 Treadwell Yukon mill at Wernecke, Yukon, permanently shut down and camp abandoned.
 Union of South Africa abandoned gold standard, December 28, 1932.
 Small oil refinery operated at Fort Norman, N.W.T.
 Gem Lake and Cryderman mines, Manitoba, commenced milling.
- 1933—United States ratified the silver agreement of the London Economic Conference December 22.
 Amalgamation of Toronto and Standard Mining Stock Exchanges agreed upon.
 Salt produced at Simpson, Sask.
 Macassa mine, Kirkland Lake, Ontario, commenced milling.

1933—United States went off gold standard April 19.

Cariboo Gold Quartz Mining Co. commenced production near Barkerville, British Columbia. First absorption plant put into operation in Alberta to extract liquids from Turner Valley gas.

Milling commenced at Island Lake mine, Manitoba.

Milling commenced at San Antonio mine, Manitoba.

Monarch mine, Field, British Columbia, resumed production.

Beattie Gold Mines, Quebec, commenced production of concentrates.

Port Hope radium refinery in Ontario came into production; radium and uranium compounds produced commercially in Canada for the first time.

Green-Stabell Gold Mine, Quebec, commenced milling.

Oro Grande mine, Manitoba, commenced milling.

Reno mine, British Columbia, resumed production after destruction of mill by fire.

Seal Harbour Gold Mines Ltd. commenced operations in Nova Scotia.

Montague Gold Mines Ltd. commenced work in Montague district, Nova Scotia.

Gem Lake mines, Manitoba, taken over by Diana Gold Mines Ltd.

1934—Perron gold mine commenced milling in July—northwest Quebec.

A well, Century 1, completed in Turner Valley, Alberta, produced crude oil instead of naphtha-laden gas.

Fifty ton amalgamation mill came into production at McWatters mine, northwest Quebec.

Milling commenced at Sullivan mine, northwest Quebec, in May.

Milling commenced at Little Long Lac mine, Ontario, November 24.

Milling commenced at J. M. Consolidated mine, Patricia district, Ontario, in May.

Milling commenced at Northern Empire mine, Ontario, March 13.

Milling commenced at Matachewan Consolidated Mine, Matachewan district, Ontario.

Milling commenced at Young-Davidson mine, Matachewan district, Ontario, on September 8.

Milling commenced at Central Patricia mine, Patricia district, Ontario, on May 27.

Tetreault mine, Portneuf county, Quebec, resumed production in November.

First actual production of selenium in Quebec; recovered by Canadian Copper Refiners Ltd. from anode copper from Noranda smelter.

Lloydminster No. 1 first commercial gas well in Saskatchewan came in at 1,975 feet, Lloydminster, March 30.

Lloydminster first town in Saskatchewan to use natural gas.

Discovery of gold south of Beaverlodge Lake, Saskatchewan, by C. Nyman or Tom Box.

January 31, the President of the United States issued a Proclamation reducing the gold weight of the United States dollar from 25.8 to 15 5/21 grains, 0.9 fine.

Dominion Tax on gold came into effect April 19.

Bralorne mill, British Columbia, capacity increased and late in year milling was commenced at the Dentonia, Island Mountain and Kootenay Belle properties.

Operations at Oro Grande mine, Manitoba, taken over by Beresford Lake Mines Ltd.; production suspended.

Guysboro Mines Ltd., Goldenville, Nova Scotia, commenced operations in July.

Rock wool industry established in Canada.

Operations resumed at Rex mine (Laguna), Manitoba.

Operations resumed at Gem mine, Manitoba, by Diana Gold Mines Ltd.

1935—Monarch mine, Field, British Columbia, suspended milling on December 5.

Treadwell Yukon Company Limited installed a new mill at Elsa mine, Mayo district Yukon.

Chromite ore smelted by Chromium Mining & Smelting Corporation Limited at Sault Ste. Marie, Ontario.

Operations suspended at Canusa mine, Porcupine district, in September.

Dominion Government transferred gold held against Dominion notes to Bank of Canada.

Milling commenced at Pickle Crow mine, Patricia district, Ontario, on May 1.

Milling commenced at Ross mine, Hislop township, Ontario, on January 1.

Milling commenced at McKenzie Red Lake mine in February.

Bank of Canada commenced operations on March 11.

Silver held by Dominion Government transferred to Bank of Canada.

United States Government's buying price of domestic silver raised to 77.57 cents in April.

Gold bullion tax discontinued after May 31 and depletion allowances revised for payments of gold mining dividends.

British Metals Corporation resumed operations in October at Sterling mine in Nova Scotia.

In northwest Quebec, the Arntfield, Canadian Malartic and Lamaque gold mines came into production.

Gold-bearing veins discovered in Sachigo River area, Patricia district, Ontario.

In British Columbia, new mills came into production at Ymir Yankee Girl, Second Relief and Sheep Creek gold mines.

First actual production of tellurium in Quebec; recovered from anode copper from Noranda smelter.

Milling commenced at God's Lake mine, Manitoba, in September.

- 1935—Milling suspended at Island Lake mine, Manitoba.
 Colony gas wells Nos. 1, 2 and 3 came in at Lloydminster, Saskatchewan.
 Rt. Hon. Sir Montague Barlow, Bt., appointed September 13 by Alberta Government to report on Alberta coal mining industry.
 Bralorne and Bradian mines consolidated in British Columbia.
 The Granby Consolidated Mining, Smelting and Power Company closed down its Anyox operations in August and the company went into voluntary liquidation.
 Explosion at Lethbridge Collieries, Alberta, December 9—16 men killed.
 Milling of ore from the Nickel Plate mine, British Columbia (Kelowna Exploration Co.), was resumed after some years of inactivity and the capacities of Cariboo Gold Quartz and Island Mountain mills were increased.
 Granda Gold Mines, western Quebec, suspended production.
 Discovery of natural gas at Kakwa, Saskatchewan.
 Consolidated Mining & Smelting Company of Canada Ltd. commenced gold mining operations at Caribou, Nova Scotia, in August.
- 1936—Imperial coal mine, Coalhurst, Alberta, abandoned.
 Pembina Peerless Colliery, Evansburg, Alberta, closed.
 Shawkey mine, northwest Quebec, brought into production in February.
 First cyanide gold mill erected in Nova Scotia, at Seal Harbour mine.
 Perron Mines, northwest Quebec, brought new 125-ton mill into production in February.
 Stadacona-Rouyn mine, northwest Quebec, brought into production in November.
 Mining claims staked in Quebec reached an all-time high record of 17,503.
 Ashley mine, Ontario, closed down in July.
 Pamour mine, Porcupine district, Ontario, went into production in May.
 Ardeen mine, Moss township, Ontario, closed down in December.
 Red Lake Gold Shore mine came into production in August.
 Argosy mine, Ontario, opened 125-ton mill in July.
 Extensions made to both International and Falconbridge Nickel Companies' plants.
 Gunnar gold mine, Manitoba, commenced production in May.
 Rex mine (Laguna) Herb Lake, Manitoba, resumed production in August.
 Clean-up operations conducted and final shipments made at Anyox copper mine, British Columbia.
 Copper Cliff smelter enlarged by two furnaces and seven converters.
 Ore dressing plant, mill and smelter at Falconbridge Nickel Mines enlarged.
 Turner Valley Royalties No. 1 brought in as the first big crude oil producer in Turner Valley field.
 Cadmium metal produced for first time by Hudson Bay Mining & Smelting Company at Flin Flon.
 Amendment to Income Tax Act in May exempted new producing metal mines for 3 years.
 Thompson Cadillac mine, western Quebec, commenced milling in June.
 Belleterre mine, western Quebec, commenced milling in October.
 Road from Amos to Val d'Or, Quebec, completed.
 Milling capacity increased to 325 tons a day at San Antonio mine, Manitoba.
 Adolph Studer discovered gold in September at Sulphide Lake, Saskatchewan.
 25-ton gold mill erected on Monarch claim, Amisk Lake, Saskatchewan.
 In British Columbia production was resumed at the Surf Inlet mine. New mills began operating in British Columbia at the Bayonne, Hedley Mascot and Wesko mines and the flotation mill at Kootenay Belle was replaced by a cyanide mill of greater capacity.
 The Dentonia flotation mill, British Columbia, ceased operating.
 Production of elemental sulphur and other products from lean roaster gases was commenced on a commercial scale at the Trail smelter.
 Important gold discovery at O'Brien mine, Cadillac township, western Quebec.
 Cave-in at Moose River gold mine, Nova Scotia—April.
- 1937—Milling commenced in July at Delnite mine, Porcupine district, Ontario.
 Milling commenced at Raven River mill, Larder Lake district, Ontario.
 Sand River mine, Thunder Bay district, Ontario, came into production.
 Gurney gold mine, Manitoba, came into production in October.
 Production resumed at Sherritt Gordon mine, Manitoba, on August 1.
 Production resumed at Copper Mountain mine, Allenby, British Columbia, in June.
 Bousquet and McMillan mines, Sudbury district, closed.
 New Golden Rose cyanide mill, Temagami district, Ontario, completed.
 Tashota mine, Ontario, closed down in October.
 Gold Eagle mine, Patricia district, completed mill in October.
 Hudson Patricia mine, Patricia district, closed.
 Milling commenced at Bankfield mine, Ontario, in June.
 Aldermac mine, western Quebec, resumed production in January.
 Sigma mine, western Quebec, commenced milling in March.
 Powell Rouyn mine, western Quebec, went into production, first shipment in June.
 Waite Amulet mines, western Quebec, resumed production in June.
 Cournor mine, western Quebec, resumed production.
 Normetal mine, western Quebec, went into production in September.

1937—Tetreault mine, Portneuf county, Quebec, closed.

Mining claims staked in Quebec reached an all-time high record of 18,841.

Goldfield, Saskatchewan, officially created a village in September.

Western Gem coal mine, Drumheller, Alberta, abandoned.

Regular mining and milling operations suspended at Central Manitoba mines, July 8.

First commercial shipment of lithium minerals in Canada made from Pointe du Bois district, Manitoba.

Gold Clauses Act passed (obligation to pay in gold not required).

Nova Scotia Government re-opened Lacey mine as a training project.

Colliery No. 20 opened at New Aberdeen, Nova Scotia, by Dominion Coal Co.

New gold mills commenced operating at Polaris Taku (November), and Durango mines, British Columbia.

The Quebec legislature passed a law enacting that a company must be constituted by a Quebec charter to acquire mining rights belonging to the Crown.

Beresford Lake Mines Ltd., Manitoba, resumed production in December.

Natural gas discovered at Kamsack, Saskatchewan.

1938—Mesabi mine, Kirkland Lake district, came into production in May.

Gas explosion at Hinton Collieries, Hinton, Alberta, March 30.

A vocational mine school was organized by Quebec Bureau of Mines at Gale mine.

A substantial deposit of copper-zinc ore discovered at Amulet mine, Quebec.

Rouyn-Louvincourt road completed in western Quebec.

Tionaga mine, Sudbury district, Ontario, came into production.

Parkhill and Algond mines, Algoma district, Ontario, closed down.

Morris Kirkland mine ceased operations in July.

Madsen Red Lake mine came into production in August.

Sachigo River mine, Patricia district, Ontario, started milling in May.

Consolidated-Rycon mill came into production in September—Yellowknife, Northwest Territories.

Hasaga mines, Red Lake, Ontario, took over Red Lake Gold Shores mill.

Privateer and Spud Valley mines, Zeballos district, British Columbia, commenced milling in the latter part of the year.

Gold Belt mine in the Sheep Creek camp, British Columbia, commenced milling.

Milling ceased at the Durango and Wesko properties, B.C.

Queens Mines Ltd. commenced operations during January in Molega district, Nova Scotia.

British Metals Corp. (Canada) Ltd. closed down mining operations at Stirling, Nova Scotia in February.

Moneta mine, Porcupine district, brought into production in January.

Big Missouri mill in Portland Canal area, British Columbia, came into production in May.

Development of Box mine near Goldfields, Saskatchewan.

Cariboo Hudson mine, British Columbia, commenced producing.

New mines commencing production in Quebec were the East Malartic, Francoeur, Halliwell, Lapa Cadillac, Lake Rose, Pan Canadian, Payore and Sladen-Malartic.

C.N.R. Bonnetterre-Rouyn line completed in northwest Quebec.

Commercial production of mercury at Mud Creek, British Columbia.

Hallnor mine, Porcupine district, Ontario, brought into production in June.

Milling commenced in June at Golden Gate mine, Kirkland Lake district, Ontario.

Upper Canada mine, Kirkland Lake district, Ontario, came into production.

Kerr-Addison mine, Larder Lake, commenced milling on May 2.

Cline mine, Algoma district, Ontario, commenced milling in July.

McLeod-Cockshutt and Hardrock mines in Thunder Bay district, Ontario, started milling and Magnet mine shipped ore.

Gold discovered at Thompson, Wray and Russell Lakes, Northwest Territories.

Straw Lake Beach mine, Kenora district, Ontario, started milling.

Lapa Cadillac mine, western Quebec, commenced milling in August.

East Malartic mine, western Quebec, commenced milling in November.

Tombill mine, Thunder Bay district, came into production in February.

Discovery of bessemer grade hematite ore at Steep Rock Lake, Atikokan, Ontario, reported in March.

Tungsten mine opened at Goff, Nova Scotia.

Colliery No. 18 opened at New Waterford, Nova Scotia, by Dominion Coal Co.

Sladen Malartic mine, western Quebec, commenced milling in January.

Pan Canadian mine, western Quebec, went into production in May.

Payore mine, western Quebec, commenced milling in June.

Lake Rose mine, western Quebec, commenced milling in June.

Francoeur mine, western Quebec, went into production in August.

A Superior School of Mines, Geology and Metallurgy established in Quebec city.

Canadian Kaolin Silica Products Ltd. remodelled and enlarged its silica plant at St. Remi,

Papineau county, Quebec; daily capacity increased to 500 tons.

Belleterre Quebec Mines Ltd. completed the erection of a hydro-electric power plant on Winneway River, Guilmet township.

Oil found in wells at Lloydminster and Vara, Saskatchewan.

1939—New Gold Clauses Act passed.

Negus mine, Yellowknife, Northwest Territories, came into production in February.

Eustis mine, Quebec, closed permanently.

Export of copper, lead, zinc and various other metals and minerals prohibited without licence.

New Helen iron mine, Michipicoten district, Ontario, resumed production.

September 1, German army invades Poland.

September 3, Germany and Great Britain at war.

September 10, Canada declared war against Germany.

Income Tax amendment afforded tax credit to mining industry as a whole.

Amm gold mine, western Quebec, went into production in March.

Mooshla mine, western Quebec, went into production in August.

Malartic Gold Fields mine, western Quebec, commenced milling in December.

Chesterville mine, Larder Lake, Ontario, came into production in June.

Tyrant mine, Matachewan district, Ontario, came into production in June.

Ronda mine, Sudbury district, Ontario, produced from January to August.

Preston East Dome mine, Porcupine district, Ontario, came into production in March.

Magnet Consolidated Gold Mine, Thunder Bay district, Ontario, commenced milling in July.

Uchi mine, Patricia district, Ontario, commenced milling in May.

Cochenour Willans, Patricia district, Ontario, came into production in March.

Kenricia mine, Kenora district, Ontario, started milling in July.

Agwa mine, Ontario, began milling in July, closed down September 30.

Guysborough Mines Limited open new mine at Lake Charlotte, Nova Scotia.

Tungsten mine at Indian Path, Nova Scotia, reopened by Siscoe Gold Mines Ltd.

Wood Cadillac mine, western Quebec, commenced milling in December.

Bay View Colliery No. 8 opened at Joggins, Nova Scotia, by Joggins Coal Co. Ltd.

Central Cadillac mine, western Quebec, commenced milling operations in November, using Thompson-Cadillac mill.

Quebec Government established an ore sampling plant at mine school.

Waite Amulet Mines Ltd. built a new mill at Amulet mine.

Canadian Refractories Limited started development of large brucite deposits in Gatineau district of Quebec.

De Santis mine, Porcupine district, Ontario, commenced milling in July.

Broulan mine, Porcupine district, Ontario, commenced milling in November, using Mace mill.

Porcupine Lake mine closed down in April.

Mace mine, Porcupine district, Ontario, closed down in November.

New 150 ton mill of Upper Canada Mines, Kirkland Lake district, started.

Raven River mine ceased milling, Larder Lake, Ontario, in July.

Kerr-Addison mine, Larder Lake, Ontario, increased mill to 900 tons.

Tionaga mine, Sudbury district, Ontario, closed down in May.

Lebel Oro mine, Sudbury district, Ontario, closed down in October.

Algoma Summit mine, reopened under name of Magino.

Minto mine, Algoma district, Ontario, closed down July 31.

Ranson mine, Algoma district, started in July.

Hiawatha mine, Algoma district, Ontario, suspended operations in July.

Jellicoe mine, Thunder Bay district, Ontario, commenced ore shipments to Magnet mill in August.

Berens River mill, Patricia district, Ontario, started September 8.

Elora mill, Kenora district, Ontario, closed down in September.

Cordova mine, Hastings county, Ontario, resumed production in December.

Laguna (Rex) mine, Manitoba, suspends operations in December.

Gurney mine, Manitoba, suspends operations in November.

Flin Flon mine increases output to 5,200 tons a day.

Box mine mill, Goldfields, Saskatchewan, commenced operating in July.

Hillcrest Collieries, Alberta, abandoned.

Commercial production of tungsten concentrates at Wells, British Columbia, by Columbia Tungsten Co. Ltd.

Late in the year mills were completed at the Central Zeballos and Mont Zeballos properties in British Columbia.

Coalmont Collieries, British Columbia, ceased operations in April.

Shipment of bentonite made from a deposit 7 miles northwest of Morden, Manitoba.

J. A. Coulombe re-opened the Coulombe Titanic Iron Mine near St. Urbain, Charlevoix county, Quebec.

Montague Gold Mines Ltd. ceased operating during May in Nova Scotia.

Canadian base metals producers agree to supply the Imperial Government with copper, lead and zinc at prices prevailing shortly before the war.

1940—April 9, Canadian Government announced the formation of the Department of Munitions and Supply.

May 10, Germany invaded Belgium, Holland and Luxembourg.

1940—July 2, establishment of Wartime Industries Control Board at Ottawa.

In Quebec the Amm and Mooshla Gold Mines ceased production and the Pandora and Senator-Rouyn mines produced bullion for the first time.

Cordova and Addington gold mines in eastern Ontario closed down.

Aunor Gold Mines Ltd., Porcupine camp, Ontario, in January shipped bullion for the first time.

Broulan Porcupine mines, Ontario, erected a new mill.

Faymar Porcupine mine, Ontario, commenced milling in April.

Hollinger Cons. Gold Mines Ltd. erected the first concrete headframe in Canada.

Jellicoe Mines Ltd., Ontario, ceased operations.

McMarnac Red Lake Gold Mines Ltd., Ontario, came into production in October.

J. M. Consolidated Gold Mines Ltd., Ontario, ceased operations April 24.

Jason Mines Ltd., Ontario, resumed operations at the old Argosy mine in June.

Operations ceased at the Kenricia mine, Ontario, May 31.

Upper Seine Gold Mine, Ontario, resumed production.

Pamon Gold Mines Ltd. re-opened Monarch mine, Amisk Lake, Saskatchewan.

Hydro-electric plant completed by Consolidated Mining & Smelting Co. of Canada, Ltd., at Prosperous Lake, Northwest Territories.

Slave Lake Gold Mines Ltd. resumed operations in Northwest Territories in September.

Mercury gold mines, Northwest Territories, carried on exploration work.

Canadian Industrial Minerals Ltd., discovered important barite deposit in October at Pembroke, Hants county, Nova Scotia.

East deposit of Sherritt Gordon Mines Ltd., Manitoba, came into production.

Milling re-commenced at Monarch mine, B.C. January 15.

Eldorado mine, Northwest Territories, temporarily closed June 18.

Consolidated Mining & Smelting Company of Canada, Ltd., commenced production of mercury at Pinchi Lake, British Columbia in June.

Canada banned exports of copper except to Great Britain.

Publication of statistics relating to Canadian production of strategic metals and minerals banned in December.

Norwegian Nickel refinery of Falconbridge Nickel Mines Ltd. seized by Germans; company's matte now treated by International Nickel Company of Canada, Limited.

Operation of Western Exploration Company mill at Silverton, British Columbia, resumed in September.

Nicolet Asbestos Mines, Tingwick township, Quebec, resumed production in April.

The Quebec Legislature repealed the law passed in 1937 enacting that a company had to be incorporated under a law of the province to acquire mining rights on land forming part of public domain.

The Quyon Molybdenite Company Ltd. started production at the Moss mine, Onslow township, Quebec.

The Quebec Legislature passed the Unwrought Metal Sales Act to facilitate the suppression of illegal traffic in precious metals.

The Senneterre-Mont Laurier highway, Quebec, was opened to traffic.

Century mine, Elbow Lake, Manitoba, installed a century mill and produced some gold in July.

San Antonio mine, Manitoba, increased daily production to 550 tons in September.

Beresford Lake Mines Ltd., Manitoba, discontinued production in October.

50-ton sodium sulphate plant was erected at Sybouts Lake, Saskatchewan.

1941—Canadian Wartime Mine Shop Association formed in May.

Seal Harbour Gold Mines, Nova Scotia, closed down.

Senator-Rouyn completed its new mill in April.

Morris Kirkland Gold Mines, Ontario, closed down in December.

Hoyle Gold Mines, Ltd., Ontario, commenced milling in January.

Mic Mac Mines, western Quebec, commenced construction of a mill.

West Malartic mines, western Quebec, commenced erection of a mill.

The Quebec Government completed, in October, the erection of a hydro-electric power plant in Laudanet township, western Quebec.

New plant using vacuum process erected by Neepawa Salt Co., Manitoba, for greatly increased salt production.

Natural gas piped to Kamsack, Saskatchewan.

Discovery of glass sands at Red Deer River, Saskatchewan.

J. Purdy discovered an important deposit of muscovite mica on Lot 6, Concession 2 of Mattawan township, Nipissing district, Ontario.

Canadian Industrial Minerals Ltd. commence milling barite at Pembroke, Nova Scotia, in May.

First fluorspar mined in Nova Scotia at Lake Ainslie by North American Chemical Company.

Bonetel Gold Mines Ltd., Ontario, shipped ore in November.

New Golden Rose mine, Ontario, closed in September.

500-ton mill at Jerome mine, Ontario, commenced operating in August.

St. Anthony mine, Ontario, closed in December.

1941—Northern Empire Mines Ltd., Ontario, ceased operations.

Operations ceased at the Upper Seine mine, Ontario.

Operations at the Gold Eagle mine, Ontario, ceased September 12.

Mining ceased at Howey mine, Ontario, November 3.

Straw Lake Beach Mines ceased operations in July.

The Howe Sound Exploration Co. explored its Snow Lake property, Manitoba.

Preview Mines Ltd. operated a small gold mill at Sulphide Lake, Saskatchewan.

Clean-up operations were conducted at the Windpass mine, British Columbia.

Milling ceased at Relief Arlington mine, British Columbia, June 28.

Milling commenced at Ptarmigan mine, Northwest Territories, November 27.

Milling commenced at Thompson-Lundmark mine, Northwest Territories, August 19.

Golden Manitou Mines Ltd., Quebec, commenced erection of a mill.

Lake Geneva Mining Co. Ltd., Ontario, conducted mining and milling from August 1.

Zincton Mines Ltd., British Columbia, exported zinc concentrates.

Aluminum Company of Canada Ltd. erected a plant at Wakefield, Quebec, for the production of brucite granules.

Tin produced commercially for the first time in Canada; recovered at Trail, British Columbia, by the Consolidated Mining & Smelting Company of Canada, Ltd.

Magnesium powder produced at Trail, British Columbia, by Consolidated Mining and Smelting Company of Canada, Ltd.

Old Josephine iron mine, Algoma district, Ontario, being developed.

Strike of miners at Kirkland Lake, commenced November 18.

Reno Gold Mines mill, British Columbia, shut down late in the year.

Refinery of Abasand Oils Ltd., commenced operating near Fort McMurray, Alberta; plant destroyed by fire in November.

1942—March 6, Prime Minister King announced approval of construction of Alaskan Highway. Wartime Metals Corporation formed in Canada.

West Malartic, Mic Mac and Golden Manitou mines came into production in Quebec.

Arntfield mine, Quebec, closed in April.

Abasand Oils Ltd., rebuilt refinery at Fort McMurray, Alberta.

Wood Cadillac mine, Quebec, closed in June.

Pandora mine, Quebec, closed in August.

Cournor mine, Quebec, suspended operations at midyear.

Operations suspended April 14 at Golden Gate and Crescent mines, Ontario.

Mining operations suspended at the De Santis, Faymar, Nakhodas and Naybob properties, Porcupine district, Ontario.

Hollinger Gold Mines, Ontario, completed a scheelite mill.

Tyrannite mine, Ontario, suspended operations July 31.

Operations suspended at Rundle mine, Ontario, July.

Renabie property, Ontario, closed in May.

Cline Lake mine, Ontario, closed in November.

Production at Bankfield mine, Ontario, ceased August 30.

Operations ceased at Tombill and Elmos mines, Ontario, in November.

Operations ceased at Sturgeon River mine, Ontario, in October.

Sand River mine, Ontario, closed August 26.

Jason mine, Ontario, closed down October 10.

Gunnar Gold Mine, Manitoba, closed in June.

Box mine, Saskatchewan, closed August 15.

Polaris-Taku mine, British Columbia, closed in April.

Big Missouri mine, British Columbia, ceased operations in October.

Surf Inlet mine, British Columbia, ceased operations in November.

Bayonne mine, British Columbia, closed August 31.

Production of scheelite concentrates began early in the year at the Red Rose property, Hazelton, British Columbia.

Buccaneer mine, British Columbia, closed August 11.

Central Zeballos mine, British Columbia, closed July 7.

Homeward mine, British Columbia, closed February 7.

Musketeer mine, British Columbia, closed July 23.

Mount Zeballos mine, British Columbia, closed April 30.

Spud Valley mine, British Columbia, closed June 30.

Ymir Yankee Girl mine, British Columbia, closed October 31.

New Calumet Mines carried on an extensive development program in Quebec.

Ptarmigan mine, Northwest Territories, closed in September.

Ruth mine, Northwest Territories, milled from August 1 to August 12.

International Tungsten Mines Ltd. (Slave Lake Gold Mines) operated only during first eight months of the year.

New copper deposit explored near Lennoxville, Quebec, by Aldermac Copper Corp. Ltd.

Miners' strike at Kirkland Lake ended February 11.

Indium produced in Canada for the first time at Trail, British Columbia.

Plant of Dominion Magnesium Ltd. near Renfrew, Ontario, came into production in September.

1942—Important molybdenite deposits discovered by Dome Exploration Co. in Pressiac township, Quebec.

Kootenay Bell mine, British Columbia, ceased milling late in year.

The Tetreault mine, at Montauban-les-Mines, Portneuf county, Quebec, was re-opened by Siscoe Metals Ltd.; production started in August.

Wartime Metals Corporation re-opened the old molybdenite reduction plant in LaCorne township, Quebec.

Wartime Metals Corporation re-opened the Belanger chromite mine, in Coleraine township, Quebec, and commenced erection of a mill.

Chromite Limited, Cleveland township, Quebec, commenced production of chromite concentrate.

The Quebec Department of Mines erected a scheelite mill at the mine school near Val d'Or. For the first time the value of the annual mineral production of the province of Quebec reached the \$100,000,000 mark.

Extensive deposits of chromite discovered in June, in Bird River area, Manitoba.

Ogama mine, Manitoba, ships gold ore to Gunnar mill.

Successful operations carried out in the production of peat moss for agricultural purposes from Julius bog, Moss Spur, Manitoba.

250-ton sodium sulphate plant erected at Alsask Lake, Sask., June.

Pamon gold mine plant, Saskatchewan, destroyed by fire May 13.

Eldorado pitchblende mine, Northwest Territories, re-opened in April.

Sheritt-Gordon mine, Manitoba, produced zinc concentrates, June.

United States established a price of 71.11 cents an ounce for silver produced in the United States; foreign silver 45 cents per ounce.

Seal Harbour Gold Mines Ltd. ceased operations in Nova Scotia.

Guysboro Mines Ltd., Nova Scotia, suspended operations.

Canol project started early in summer near Fort Norman, N.W.T., through military necessity; 14 wells, showing petroleum, drilled during year.

1943—Mandy mine, Manitoba, re-opened by Emergency Metals Ltd., produced concentrate in April.

Naybob mine, Porcupine district, Ontario, closed in January.

Moneta mine, Porcupine district, Ontario, closed in August.

Hoyle mine mill, Porcupine district, Ontario, destroyed by fire in July.

Yama mine, Larder Lake, Ontario, closed in February.

Young-Davidson mine, Ontario, closed from January to May.

Wendigo mine, Ontario, permanently closed in January.

Regnery Metals mine, Ontario, closed in April.

Uchi mine, Ontario; mining operations discontinued in March.

Magnet mine, Ontario, suspends operations in November.

Jerome mine, Ontario, suspends milling in August.

Gold rush into Missanabie, Ontario.

Privateer mill, British Columbia, closed in September.

Emerald and Red Rose tungsten mills in British Columbia shut down.

Elk River collieries, near Fernie, British Columbia, prepared for production.

Strike of coal miners in British Columbia and Alberta November 1 to November 13.

Indian Molybdenum Ltd. commenced production in September of molybdenite concentrates in Pressiac township, Quebec.

Development of Stobie and Murray nickel mines, Ontario, resumed; Old Alexo nickel mine, Ontario, re-opened by Harlin Nickel Mines Ltd.; ore shipped to International Nickel Company.

Ontario Nickel Corporation shipped nickel ore from Moose Lake, Sudbury district.

Bralorne Mines Ltd. produced mercury at Takla Lake, British Columbia.

Kenwest mine, Ontario, suspended operations in July.

Gold Belt mine, British Columbia, suspended operations in September.

Operations suspended at Con mine, Northwest Territories, September.

Operations suspended at Rycon mine, Northwest Territories, September.

Operations suspended at Thompson-Lundmark mine, Northwest Territories, October.

Reco Mountain Base Metals mines, British Columbia, shipped concentrates in November.

Twin "J" Mines Ltd., British Columbia, shipped concentrates in August.

Kootenay Florence mine, British Columbia, shipped concentrates in August.

New Calumet Mines Ltd., Quebec, came into production; zinc concentrates shipped in September.

Nickel Offsets Ltd. made shipments of nickel ore from near Chelmsford, Sudbury area.

Asphalt produced from bituminous sands in Alberta by Oil Sands Ltd.

Green Act raised United States Treasury price of silver to 71.11 cents per ounce.

Lava talc deposit developed in Kootenay National Park, British Columbia.

Molybdenite concentrates shipped from LaCorne mine, Quebec, a wartime project.

1944—Elder Gold Mines starts drilling northeast of Noranda.

Hosco moves drill to Joannes township property.

- 1944—Wasa Lake starts drilling property east of Aldermac.
 Eldona drilling on property adjoining Donaldia in Rouyn township.
 Heva Cadillac cuts favourable structure in first drill hole.
 Detomac mines commences production of fluorspar in Madoc area, Ontario.
 Powell Rouyn mill damaged by tornado.
 Aldermac Copper brought new base metal property, near Sherbrooke, Que., into production.
 Discovery wells in Lloydminster area were Shaw Petroleum No. 3, Silverdale No. 1 and Lloyd Oil Producers No. 1.
 Labour shortage forces shutdown of one of two reverberatory furnaces in smelter of Noranda Mines.
 Springer Sturgeon shipped crude barite under contract with W.P.B. at Washington.
 Base Metals Mining Co. resumed milling but production limited by manpower shortage.
 Milling operations temporarily suspended at Negus Mines due to labour shortage.
 Francoeur suspended milling, then shipped ore to Noranda smelter for flux.
 Beattie suspended milling to concentrate available labour on mining.
 Acute labour shortage forced suspension of mining and milling at McMarmac Red Lake.
 Steep Rock Iron commences shipping of iron ore.
 Pinchi Creek ceased production of mercury.
 Whitehorse refinery produced high octane gasoline from Fort Norman petroleum.
 Kam Kotia Porcupine suspended operations.
 Hard Rock Gold Mines mill closed.
 Jumping Pound area produced crude petroleum.
 Thallium produced by Hudson Bay Mining & Smelting Co.
- 1945—Bevcourt cut values in first drill hole on Louvicourt property.
 Richmac commenced drilling on Red Lake property.
 Quémont drilled ore body outlined by magnetometer survey.
 Buffadison commenced drilling Louvicourt ground under supervision of Noranda.
 MacLeod-Cockshutt suspended milling due to labour shortage.
 Victory in Europe. May 8, 1945.
 First commercial oil well completed in Lloydminster, Sask., area.
 Alger Gold starts drilling on old Thompson-Cadillac ground.
 Falconbridge Nickel Co. refinery in Norway being readied to resume operation.
 Aldermac Copper Corp. closed Moulton Hill plant.
 Negus resumed milling.
 Granby Consolidated cut milling to half of capacity.
 Molybdenite Corp. acquired plant in LaCorne from Wartime Metals.
 Japan surrendered Aug. 15, 1945.
 Purdy Mica closed trimming plant at North Bay.
 Jerome suspended operations.
 Central Cadillac mine dewatered.
 Oil well drilling resumed at Pekisko Hills.
 Gunnar Gold sold mining plant to Ogama-Rockland.
 Jason mine dewatered.
 Sheep Creek resumed milling at Zincton mines.
 Hard Rock Gold Mines resumed milling.
 First commercial production of calcium in Canada by Dominion Magnesium Ltd.
 Federal Government suspended operations in oil sand area, Fort McMurray.
- 1946—Ceiling price of silver was lifted.
 West Malartic suspended milling.
 5,000 quarts of nitroglycerine exploded in West Flank No. 2. Turner Valley, Alta.
 Sheritt Gordon found nickel-copper in drill core at Granville Lake, Manitoba.
 Lake Shore milling rate back to 1,000 tons daily.
 Fire destroyed the plant of Bridge River Consolidated.
 Milling resumed at Magnet Consolidated.
 Undersill Mining dewatered old Sand River shaft.
 MacLeod-Cockshutt resumed milling.
 Hoyle mine was re-opened and ore was shipped to Pamour mill.
 Privateer reopened mill at Zeballos.
 Bayonne Consolidated resumed milling.
 Pacific (Eastern) dewatered mine workings.
 Mayfair dewatered Peoples Mine, Cobalt area.
 Naybob resumed operations.
 Workings dewatered at Silver Miller.
 Western Exploration resumed milling at Silvertown.
 Woodhall stockpiled barite at Night Hawk Lake.
 Canadian dollar placed on par with United States dollar.
 Gold reduced from \$38.50 to \$35.00 per troy ounce.
 Western Exploration suspended mill operation for second time within a year.
 Elder started shipping gold ore to Noranda smelter.
 Beattie mine filled with another rush of mud.
 Production resumed at Polaris-Taku.

Jason resumed milling.

Stolberg well, Alberta, set new provincial depth record at 13,109 feet.

Work suspended at tar sands project at Bitumont.

Mill test runs made by Peg-Tantalum Mines.

Hasaga temporarily suspended milling.

Labour strike at Noranda Mines.

O'Brien made gold discovery at Bachelor Lake.

Prices of copper, lead and zinc raised while control remained.

First commercial production of bismuth concentrates in Quebec.

All weather highway to Red Lake was opened.

1947—Dominion Magnesium resumed operations at Haley, Ontario.

Kirkland Golden Gate resumed milling operations.

Control of Mic-Mac mines taken over by Continental Diamond Drilling.

Twin "J" resumed milling.

Leduc No. 1 of Imperial Oil blows in February 13th.

Francoeur suspended mining and milling.

New mill of American Nepheline Ltd. started.

Fire underground killed twelve men at East Malartic.

Hedley Mascot resumed milling.

Louvicourt poured first gold bar.

Sheep Creek resumed operations.

Duquesne shipped ore to Consolidated Beattie.

Milling operations started at Nitinat.

Western Exploration resumed milling at Slocan property.

Consolidated Central Cadillac resumed milling.

Renabie started operating mill.

After 34 month shutdown, McMarmac mill resumed operations.

Prices of base metals, except tin, decontrolled June 9th.

Thompson Lundmark resumed milling.

New mill at Dentonia started operation.

Salt produced by Maritime Industries Ltd. in Nova Scotia.

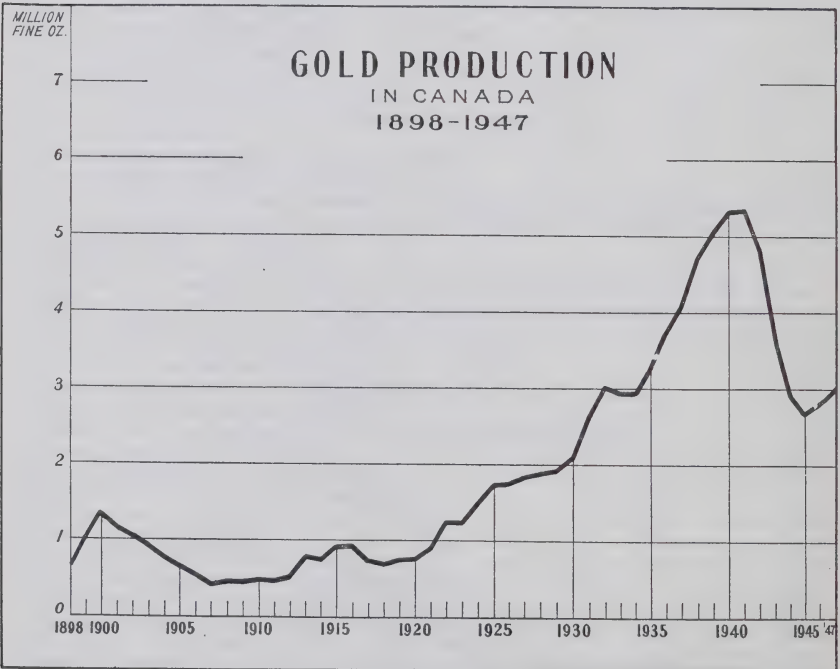
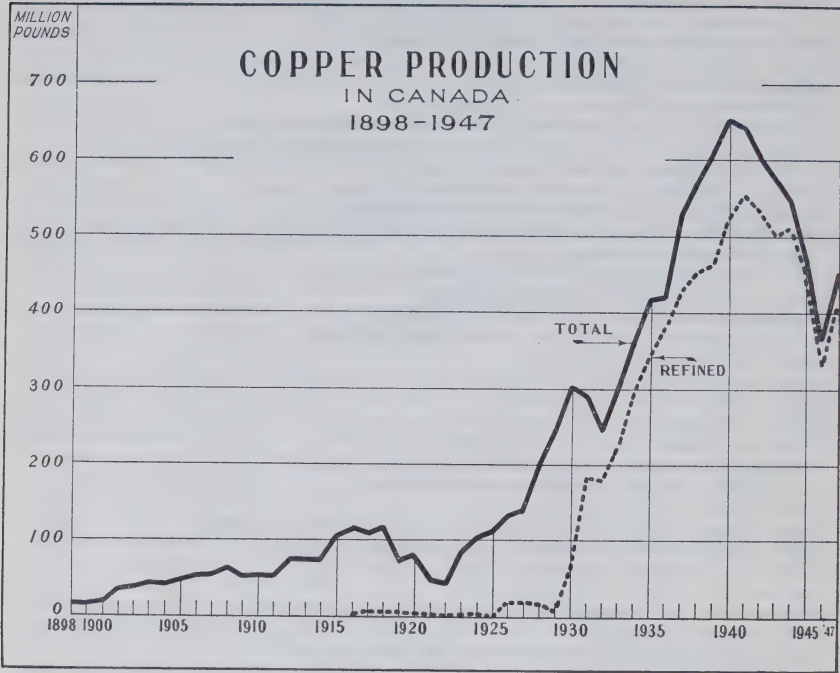
Jason suspended milling.

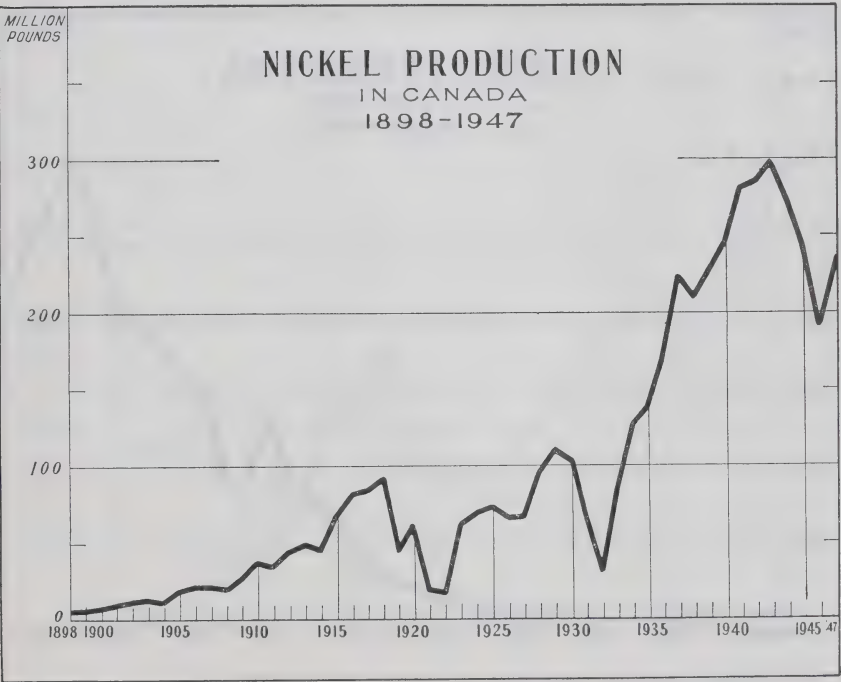
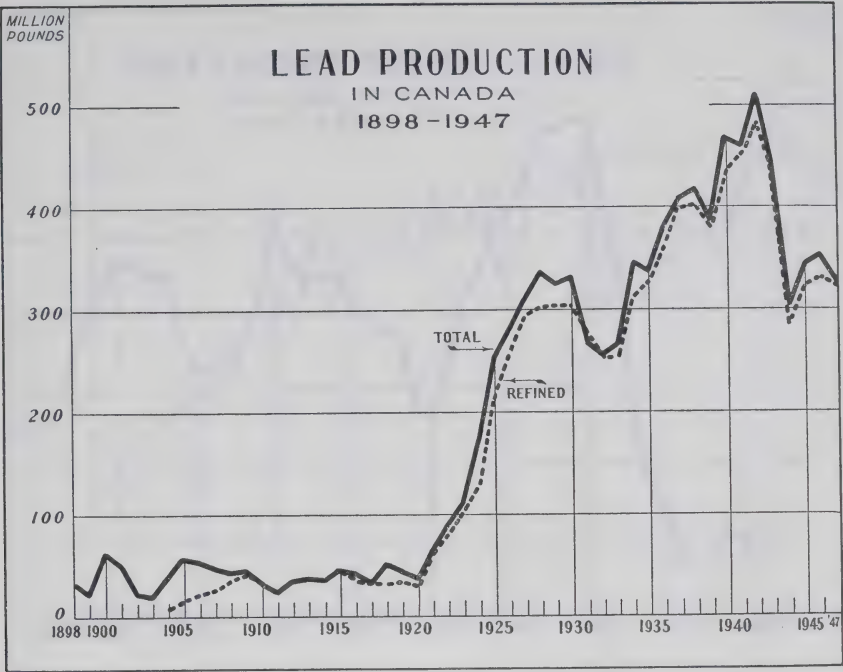
Production started by Newcor Mining & Refining Ltd.

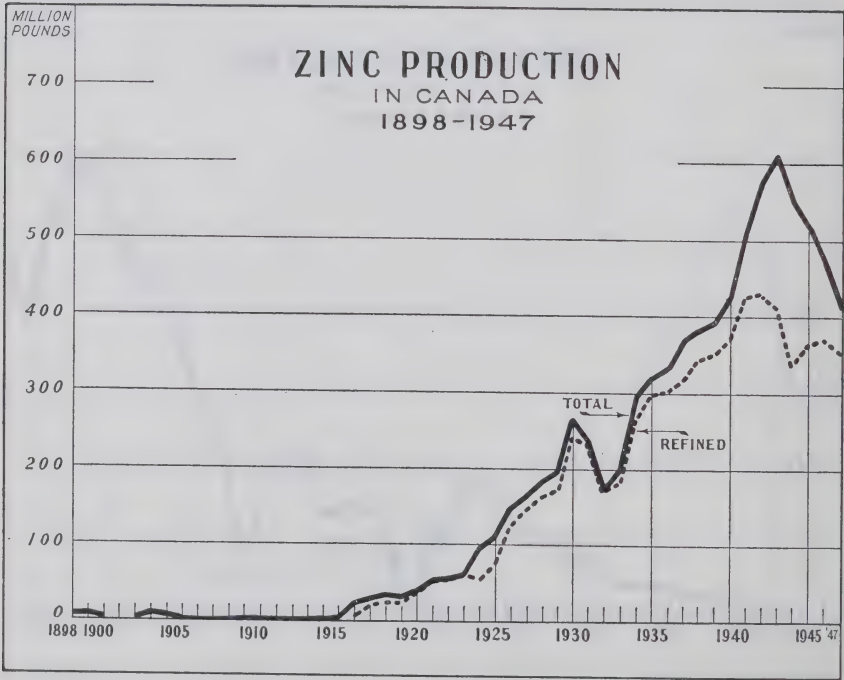
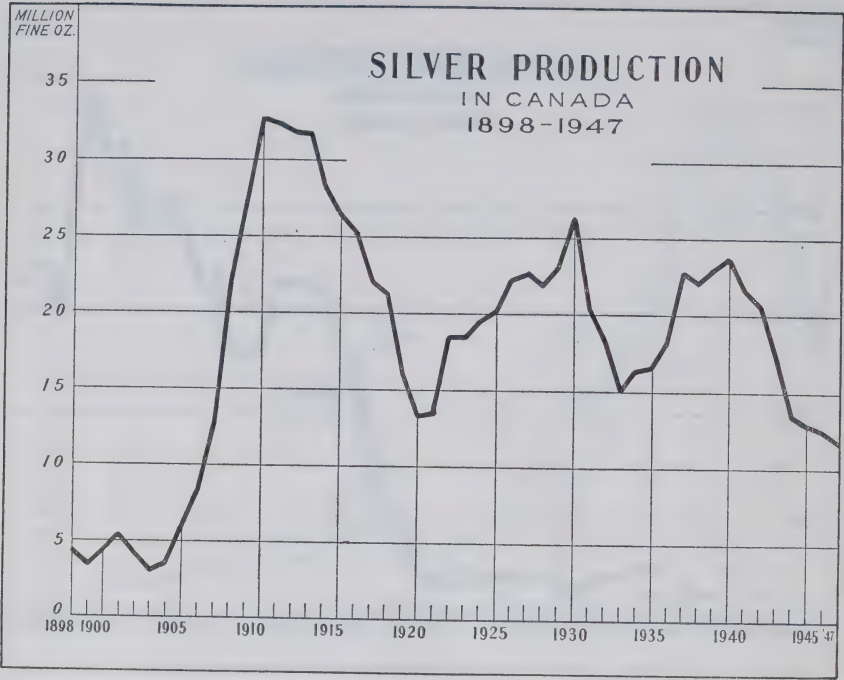
Base Metal Mining resumed milling.

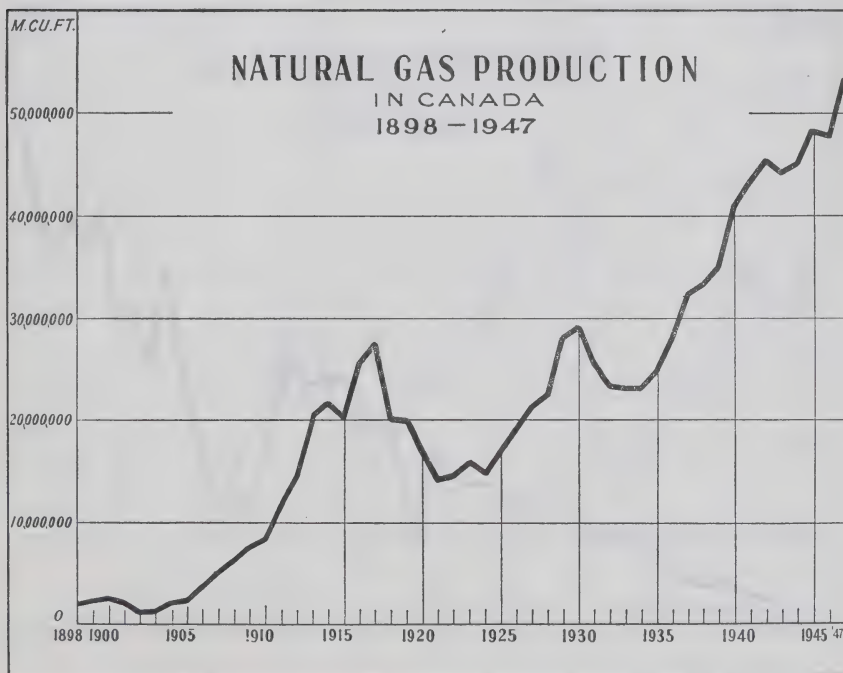
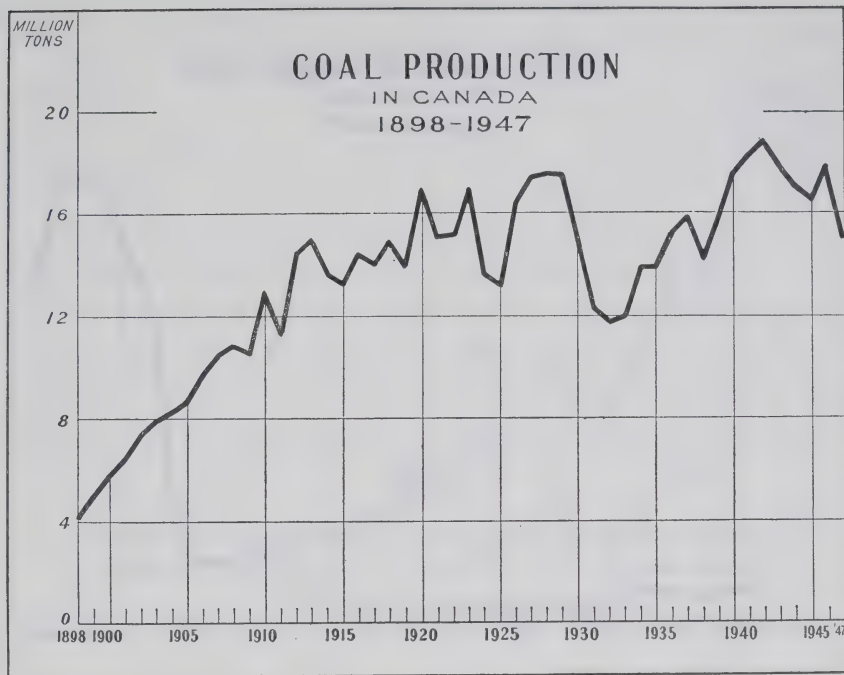
Labour strike at Sherritt Gordon mines.

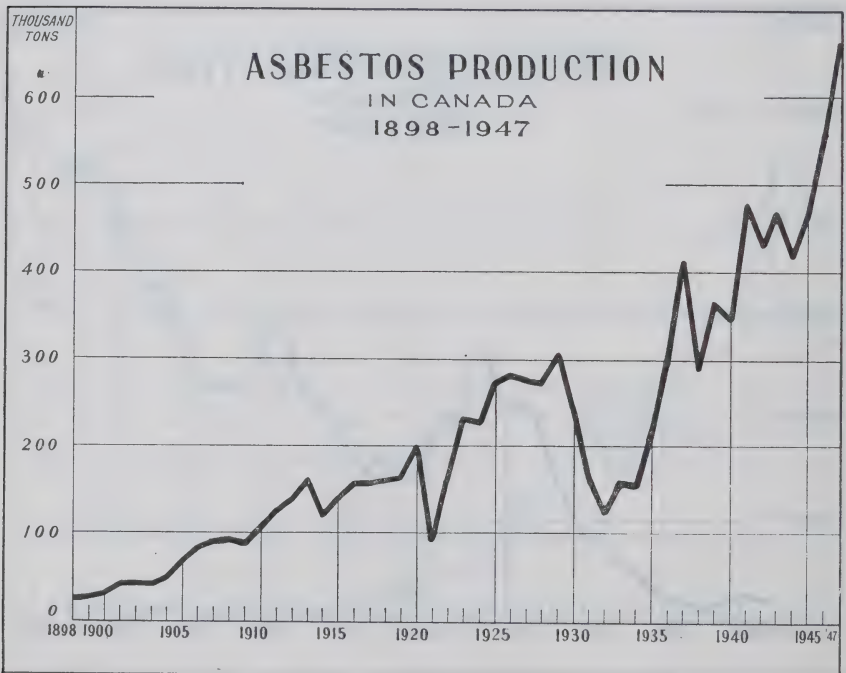
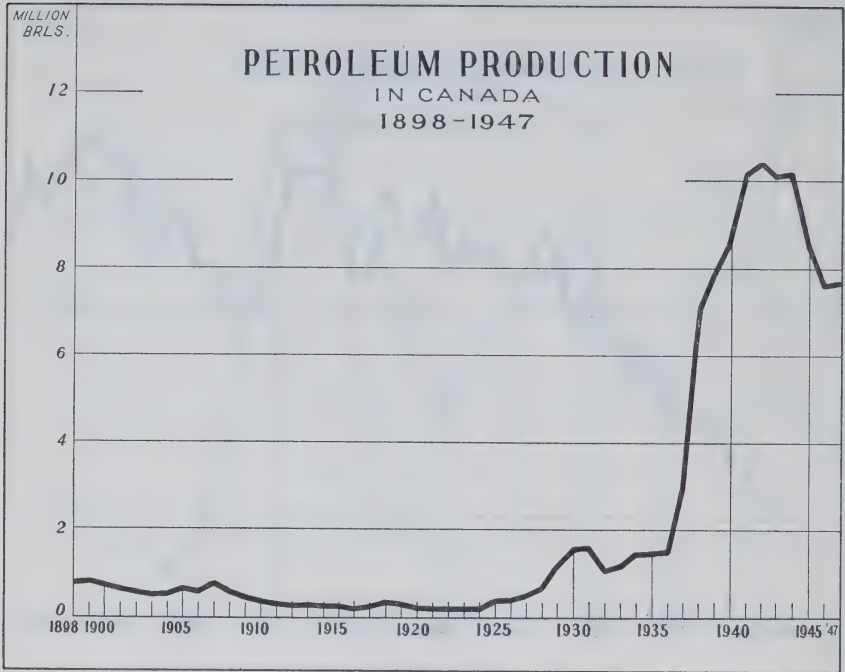
New Marlon poured its first gold bar.

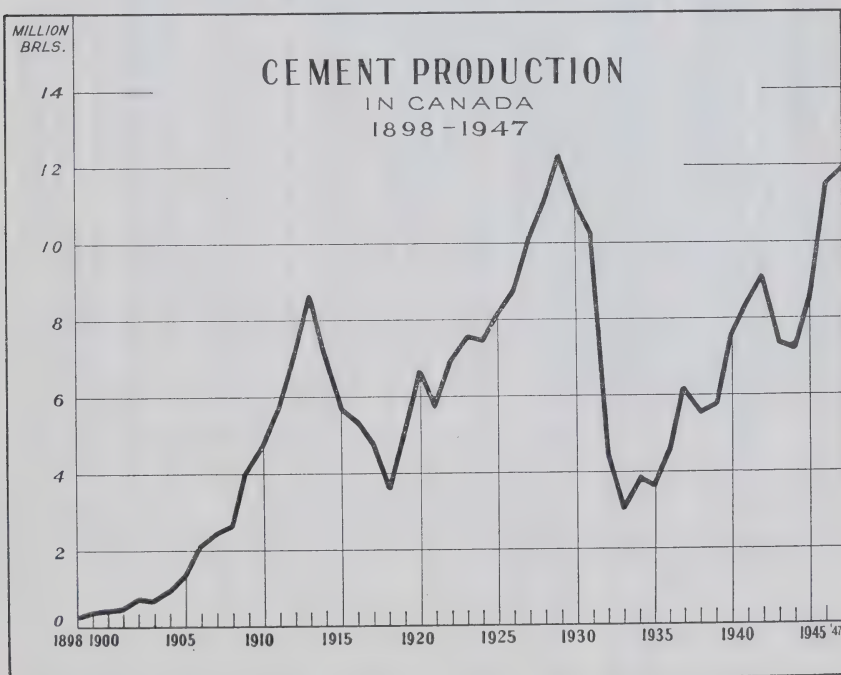
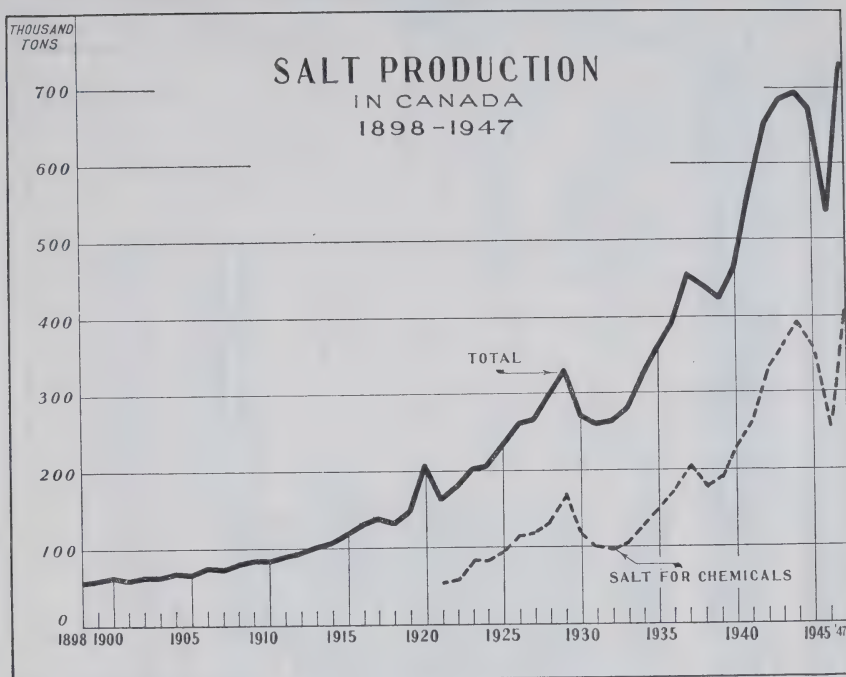












Historical Summary of Canada's Mineral Production—Dominion Totals

Year	Gold*		Silver		Copper		Lead		Zinc†	
	fine oz.	\$	fine oz.	\$	pounds	\$	pounds	\$	pounds	\$
1858..	34,104	705,000								
1859..	78,129	1,615,072								
1860..	107,806	2,228,543								
1861..	128,973	2,666,118								
1862..	135,391	2,798,774								
1863..	202,498	4,186,011								
1864..	199,605	4,126,199								
1865..	192,898	3,987,562								
1866..	152,555	3,153,597								
1867..	145,775	3,013,431								
1868..	134,169	2,773,527								
1869..	102,720	2,123,405								
1870..	83,415	1,724,348								
1871..	105,187	2,174,412								
1872..	90,283	1,866,321								
1873..	74,346	1,536,871								
1874..	97,856	2,022,862								
1875..	130,300	2,693,533								
1876..	97,729	2,020,233								
1877..	94,304	1,949,444								
1878..	74,420	1,538,394								
1879..	76,547	1,582,358								
1880..	63,121	1,304,824								
1881..	63,524	1,313,153								
1882..	60,288	1,246,268								
1883..	53,853	1,113,246								
1884..	51,202	1,058,439								
1885..	55,575	1,148,829								
1886..	70,732	1,463,196								
1887..	57,460	1,187,804	355,083	347,271	3,505,000	385,550				
1888..	53,145	1,098,610	437,232	410,998	3,200,424	366,798	204,800	9,216		
1889..	62,653	1,295,159	383,318	358,785	5,562,864	927,107	674,500	29,812		
1890..	55,620	1,149,776	400,687	419,118	6,809,752	936,341	165,100	6,488		
1891..	45,018	930,614	414,523	409,549	6,013,671	947,153	105,000	4,704		
1892..	43,905	907,601	310,651	272,130	5,529,401	1,226,703	88,665	3,857		
1893..	47,243	976,603	428,738	330,128	7,087,275	818,580	808,420	33,064		
1894..	54,600	1,128,688	847,697	584,049	8,109,856	871,809	2,135,023	79,636		
1895..	100,798	2,083,674	1,578,275	1,030,299	7,708,789	736,960	5,703,222	187,636		
1896..	133,262	2,754,774	3,205,343	2,149,503	7,771,639	836,228	16,461,794	531,716		
1897..	291,557	6,027,016	5,558,446	3,323,395	9,393,012	1,021,960	24,199,977	721,159		
1898..	666,386	13,775,420	4,452,333	2,593,929	13,300,802	1,501,660	39,018,219	1,996,853		
1899..	1,028,529	21,261,584	3,411,644	2,032,658	17,747,136	2,134,980	31,915,319	1,206,399	788,000	36,011
1900..	1,350,057	27,908,153	4,468,225	2,740,362	15,078,475	2,655,319	21,862,436	977,250	814,000	46,805
1901..	1,167,216	24,128,053	5,539,192	3,265,354	18,937,138	3,065,922	63,169,821	2,760,521	212,800	9,342
1902..	1,032,161	21,336,667	4,291,317	2,238,351	37,827,019	6,096,581	51,900,958	2,249,387		
1903..	911,559	18,843,590	3,198,581	1,709,642	42,684,554	4,511,383	22,956,381	934,095	142,200	6,882
1904..	796,374	16,462,517	3,577,526	1,407,095	41,383,722	5,306,635	18,139,283	768,562	900,000	48,600
1905..	684,951	14,159,195	6,000,023	3,621,133	48,092,753	5,649,487	37,531,244	1,617,221	477,568	24,350
1906..	556,415	11,502,120	8,473,379	5,659,455	55,609,885	7,497,660	56,864,915	2,670,632	9,413	139,200
1907..	405,517	8,382,780	12,779,799	8,348,659	56,979,205	11,398,120	47,608,707	3,089,187	1,154	23,800
1908..	476,112	9,842,105	22,063,233	11,686,239	63,702,873	8,413,876	45,738,703	2,542,086	1,573	49,100
1909..	453,865	9,382,230	27,529,473	14,178,504	52,493,863	6,814,754	45,857,423	1,692,139	452	3,215
1910..	493,707	10,205,835	32,869,264	17,580,455	55,692,369	7,094,094	32,987,508	1,216,249	18,371	242,699
1911..	473,159	9,781,077	32,559,044	17,355,272	55,648,011	6,886,998	28,784,969	827,717	5,063	120,003
1912..	611,885	12,648,794	31,545,560	19,440,165	77,832,127	12,718,548	35,763,476	1,597,554	6,415	101,072
1913..	802,973	16,998,923	31,545,803	19,040,924	76,976,925	11,753,606	37,662,703	1,754,705	7,889	211,774
1914..	773,178	15,983,007	28,449,821	15,593,631	75,735,960	10,601,606	36,337,765	1,627,568	10,893	186,827
1915..	918,056	18,977,901	26,625,960	13,228,842	100,785,150	14,076,635	46,316,450	2,593,721	14,895	282,563
1916..	930,492	19,234,976	25,459,741	16,717,121	117,150,028	31,867,150	41,497,615	3,532,692	23,364,760	2,991,623
1917..	738,831	15,272,992	22,221,274	18,091,895	109,227,332	29,687,980	32,576,281	3,623,020	29,668,764	2,640,817
1918..	699,681	14,463,689	21,383,979	20,693,704	118,769,434	29,250,536	51,398,002	4,754,315	35,083,175	2,862,435
1919..	766,764	15,850,423	16,020,657	17,802,474	75,053,581	14,028,265	43,827,699	3,053,037	32,194,707	2,362,448
1920..	765,007	15,814,098	13,330,357	13,450,330	81,600,691	14,244,217	35,953,717	3,214,262	39,863,912	3,057,961
1921..	926,329	19,148,920	13,543,198	8,485,355	47,620,820	5,953,555	66,679,592	3,828,742	53,089,356	2,471,310
1922..	1,263,364	26,116,050	18,626,439	12,576,758	42,879,818	5,738,177	93,307,171	5,817,702	56,290,000	2,217,536
1923..	1,233,341	25,495,421	18,601,744	12,067,509	86,881,537	12,529,186	111,234,466	7,985,522	60,416,240	3,991,701
1924..	1,625,382	31,532,443	19,736,323	13,180,113	104,457,447	13,604,538	175,485,499	14,221,345	98,909,077	6,274,791
1925..	1,735,735	36,880,826	20,228,988	13,971,150	110,450,518	15,649,882	253,590,578	23,127,460	109,268,511	8,328,446
1926..	1,754,228	36,263,110	22,371,924	13,894,531	133,094,942	17,490,300	283,801,265	19,240,661	149,938,105	11,110,413
1927..	1,852,785	39,380,464	22,736,698	12,816,677	140,147,440	17,195,487	311,423,161	16,477,139	165,495,625	10,250,793
1928..	1,890,592	39,082,005	21,936,407	12,761,725	202,696,046	28,598,249	337,946,688	15,553,231	184,647,374	10,143,050
1929..	1,928,308	39,861,663	23,143,261	12,264,308	248,120,760	43,415,251	326,522,566	16,544,245	197,267,087	10,626,778
1930..	2,102,068	43,453,601	26,443,823	10,899,376	303,478,356	37,948,359	332,894,163	13,102,665	267,643,505	9,635,166
1931..	2,693,892	58,093,396	20,562,247	6,141,943	292,304,390	24,114,065	267,342,482	7,260,183	237,245,451	6,059,249
1932..	3,044,387	71,479,373	18,347,907	5,811,081	247,679,070	15,294,058	255,947,378	5,409,704	172,283,558	4,144,454
1933..	3,949,309	84,350,237	15,187,950	5,746,027	299,982,448	21,634,853	286,475,171	6,372,998	199,311,984	6,393,132
1934..	2,972,074	102,536,553	16,415,282	7,790,840	364,761,062	26,671,438	346,276,576	8,436,658	298,579,683	9,087,571
1935..	3,284,890	115,595,279	16,618,558	8,787,148	418,997,700	32,311,960	339,105,079	10,624,772	320,649,559	9,936,908
1936..	3,748,028	131,293,421	18,334,487	8,273,804	421,027,732	39,514,101	383,180,909	14,993,869	333,182,736	11,045,007
1937..	4,096,213	143,326,493	22,977,751	10,312,644	530,028,615	61,957,219	411,999,484	21,053,173	370,337,589	18,153,949
1938..	4,725,117	166,205,990	22,219,195	9,660,239	571,249,664	56,554,034	418,927,660	14,008,941	381,506,588	11,723,698
1939..	5,094,379	184,115,951	23,163,629	9,378,499	608,825,570	60,934,589	388,569,550	12,313,768	394,533,860	12,108,244
1940..	5,311,145	204,479,083	23,833,752	9,116,172	655,593,441	65,773,061	471,850,256	15,863,605	424,028,862	14,463,624
1941..	5,345,179	205,789,392	21,754,408	8,323,454	643,316,713	64,407,497	460,167,005	16,670,815	512,381,636	17,477,337
1942..	4,841,306	186,390,281	20,695,101	8,228,296	603,661,826	60,417,372	512,142,562	17,218,233	580,257,373	17,992,379
1943..	4,922,911	140,575,088	17,344,559	7,849,111	575,190,132	67,170,601	444,060,769	16,670,814	610,754,354	24,340,174
1944..	2,651,301	112,532,073	10,627,109	5,859,656	547,070,118	65,257,172	304,582,198	13,706,199	550,823,353	23,685,405
1945..	2,696,727	103,823,990	12,942,906	6,083,166	474,914,052	59,322,261	346,994,472	17,349,723	517,213,604	33,308,556
1946..	2,832,554	104,096,359	12,544,100	10,493,139	367,936,875	46,632,093	353,973,776	27,893,230	470,620,360	36,755,450
Total	97,827,035	2,892,308,330	906,406,934	511,144,131	10,565,231,970	1,243,135,393	9,267,891,885	409,676,278	350,597,787	</

Historical Summary of Canada's Mineral Production—Dominion Totals

—Continued—

Year	Nickel		Cobalt		Arsenic		Platinum*		Palladium and other precious metals (b)	
	Pounds	\$	Pounds	\$	Tons	\$	Fine oz.	\$	Fine oz.	\$
1885.....					440	17,600				
1886.....					120	5,460				
1887.....					30	1,200		5,600		
1888.....					30	1,200		6,000		
1889.....	830,477	498,286						3,500		
1890.....	1,435,742	933,232			25	1,500		4,500		
1891.....	4,035,347	2,421,208			20	1,000		10,000		
1892.....	2,413,717	1,399,956						3,500		
1893.....	3,982,982	2,071,151						1,800		
1894.....	4,907,430	1,870,958			7	420		950		
1895.....	3,888,525	1,360,984						3,800		
1896.....	3,397,113	1,188,990						750		
1897.....	3,997,647	1,399,176						1,600		
1898.....	5,517,690	1,820,838						1,500		
1899.....	5,744,000	2,067,840			57	4,872		825		
1900.....	7,080,227	3,327,707			303	22,725				
1901.....	9,189,047	4,594,523			695	41,676		457		
1902.....	10,693,410	5,025,903			800	48,000	2,385	46,502	4,411	86,014
1903.....	12,505,510	5,002,204			257	15,420	1,710	33,345	3,177	61,952
1904.....	10,547,883	4,219,153	32,000	19,960			551	10,872	952	18,564
1905.....	18,876,315	7,550,526	236,000	100,000			574	11,870	1,003	16,746
1906.....	21,490,955	8,948,834	642,000	80,704	201	14,058	112	3,140	202	2,512
1907.....	21,189,793	9,535,407	1,478,000	104,426	986	47,303	227	7,032	607	
1908.....	19,143,111	8,231,538	2,448,000	111,118	1,702	58,566	172	2,807	328	Values
1909.....	26,282,991	9,461,877	3,066,000	94,965	1,753	67,446	547	13,604	1,271	
1910.....	37,271,033	11,181,310	2,196,000	54,699	2,049	81,044	258	8,437	523	
1911.....	34,098,744	10,229,623	1,704,000	170,890	2,097	76,237	666	28,718	753	not
1912.....	44,841,542	13,452,463	1,868,000	314,381	2,045	89,262	497	22,638	690	
1913.....	49,676,772	14,903,032	1,642,000	420,386	1,692	101,463	211	9,151	399	
1914.....	45,517,937	13,655,381	702,000	590,406	1,737	104,015	748	33,765	1,272	complete
1915.....	68,308,657	20,492,597	412,000	383,201	2,396	147,830	475	22,366	600	
1916.....	82,958,554	29,035,497	800,000	805,014	2,186	262,349	1,032	85,418	1,602	
1917.....	84,330,280	33,732,112	674,000	1,138,190	2,936	669,431	1,028	103,661	1,679	
1918.....	92,507,293	37,002,917	760,000	1,640,310	3,560	563,639	689	71,428	1,260	
1919.....	44,544,883	17,817,953	596,000	1,019,479	3,489	509,324	667	74,311	1,128	
1920.....	61,335,706	24,534,282	566,000	1,605,365	2,459	447,848	595	37,680	1,425	
1921.....	19,293,060	6,752,571	251,986	755,958	1,491	233,763	292	22,599	913	
1922.....	17,597,123	6,158,993	569,960	1,652,370	2,576	321,087	470	45,833	1,219	
1923.....	62,453,843	18,332,077	888,061	2,530,974	3,210	626,815	1,217	141,826	2,036	183,560
1924.....	69,536,350	19,470,178	948,704	1,682,395	2,311	348,293	9,136	1,091,427	9,516	863,113
1925.....	73,857,114	15,946,072	1,116,492	2,328,517	1,717	130,302	8,698	1,028,192	8,288	648,969
1926.....	65,714,294	14,374,163	664,778	1,136,014	2,537	146,811	9,521	923,607	10,024	640,178
1927.....	66,798,717	15,262,171	880,590	1,764,534	3,114	211,979	11,228	717,613	11,545	554,190
1928.....	96,755,578	22,318,907	956,590	1,672,320	2,716	193,052	10,532	708,909	13,607	627,833
1929.....	110,275,912	27,115,461	929,415	1,801,915	2,615	171,320	12,519	846,756	17,318	809,289
1930.....	103,768,857	24,455,123	694,163	1,144,007	2,261	129,527	34,024	1,543,261	34,092	895,867
1931.....	65,666,320	15,267,453	521,051	651,179	1,787	135,170	44,775	1,596,900	46,918	1,217,717
1932.....	30,327,968	7,179,862	490,631	587,957	1,212	98,714	27,343	1,099,393	37,613	901,890
1933.....	53,264,658	20,139,426	466,702	597,752	734	56,534	24,786	857,590	31,009	645,043
1934.....	128,687,340	32,139,425	594,671	592,497	824	56,412	116,230	4,490,763	83,932	1,699,228
1935.....	138,516,240	35,345,103	681,419	512,705	1,279	75,326	105,374	3,445,730	84,772	1,962,937
1936.....	169,739,383	43,876,525	887,591	804,676	683	42,491	31,571	5,320,731	103,671	2,483,076
1937.....	224,905,046	59,507,176	507,064	848,145	695	41,032	139,377	6,752,816	119,829	3,179,782
1938.....	210,572,738	53,914,494	459,226	790,913	1,088	56,538	161,326	5,196,794	130,893	3,677,342
1939.....	226,105,865	50,920,305	732,561	1,213,454	871	52,257	148,902	5,222,589	135,402	4,199,622
1940.....	245,557,871	59,822,591	794,359	1,235,220	1,047	62,798	108,488	4,240,362	91,522	3,520,746
1941.....	282,258,235	68,656,795	263,257	255,904	1,769	153,195	124,317	4,750,153	97,432	3,396,304
1942.....	285,211,803	69,908,427	(a)83,871	88,444	7,484	652,041	258,228	10,898,561	222,573	8,279,221
1943.....	288,011,615	71,675,322	175,961	191,407	1,577	254,009	219,713	8,458,951	126,004	5,233,068
1944.....	274,598,629	69,204,152	36,283	34,106	1,313	180,866	157,523	6,064,635	42,929	1,960,085
1945.....	245,130,983	61,982,133	109,123	90,026	1,023	130,909	208,234	8,017,010	458,674	18,671,074
1946.....	192,124,537	45,385,155	73,900	70,215	373	38,264	121,771	7,672,791	117,566	5,162,801
Total.....	4,619,278,412	1,244,159,172	34,600,409	33,887,158	81,879	8,000,943				

*From 1887 to 1901 placer platinum only, 1907 to 1920 represents largely, recovery of platinum metal by the International Nickel Company, in New Jersey and not necessarily all from Sudbury ores.

(a) Exclusive of metal in ore placed on government stock pile at Deloro, Ontario.

(b) Data relating to platinum metals prior to 1923 are conjectural in nature and do not necessarily agree with provincial totals.

In 1929—4,456 pounds beryl crystals valued at \$114.

Historical Summary of Canada's Mineral Production—Dominion Totals —Continued

Year	Titanium ore (a)		Iron ore (*)	Antimony ore		Chromite		Manganese ore		Molybdenite ore and concentrates (d)		Pitch- blende products
	Tons	\$		Tons	\$	Tons	\$	Tons	\$	Tons	\$	
1886			64,361	665	31,490	60	945	1,789	41,499			
1887			76,330	584	10,860	38	570	1,245	43,658			
1888			78,587	545	3,696			1,801	47,944			
1889			84,181	55	1,100			1,455	32,737			
1890			76,511	26	625			1,328	32,550			
1891			68,970	10	60			255	6,694			
1892			103,248					115	10,250			
1893			125,608					213	14,578			
1894			109,991			1,000	20,000	74	4,180			
1895			102,787			3,177	41,300	125	8,464			
1896			91,906			2,342	27,004	124	3,975			
1897			50,705			2,637	32,474	15	1,166			
1898			58,343	1,844	20,000	2,021	24,252	50	1,800			
1899			74,617			2,010	21,842	1,581	20,004			
1900			122,000			2,335	27,000	30	1,800			
1901			313,646			1,274	16,744	440	4,820			
1902			404,003			900	13,000	172	4,062	3	400	
1903			264,294			3,509	51,129	91	2,775	85	1,275	
1904			219,046			6,074	67,146	66	2,740			
1905			291,097	527		8,575	93,301	22	1,720			
1906			248,831	782		9,035	91,859	93	925			
1907			312,856	2,048	70,108	7,196	72,901	1	22			
1908			238,082	148	5,443	7,225	82,008					
1909			268,043	66	5,860	2,470	26,604					
1910			259,418	364	13,906	299	3,734					
1911			210,344			157	2,587	6	300			
1912			215,883					75	1,875			
1913			307,634									
1914			244,854			136	1,210	28	1,120	16	2,063	
1915			398,112	1,371	93,171	12,341	179,543	201	9,360	39	28,920	
1916			275,176	939	136,360	27,517	311,460	957	89,544	610	188,316	
1917			215,302	361	22,000	36,725	499,682	158	14,836	1,554	320,006	
1918			211,608			21,994	867,122	440	6,230	461	428,807	
1919			197,170			8,541	228,898	661	14,159	46	69,203	
1920			129,072			11,016	251,379	649	11,029			
1921			59,509			2,798	55,696	68	3,400			
1922			17,971			767	11,503	73	2,044			
1923	69	186	30,690			3,568	52,650	200	1,400			
1924	1,408	3,771	72					584	4,088			
1925	3,978	11,934		1	206					10	9,370	
1926	200	600		1	281					15	11,176	
1927	2,029	8,980								12	10,472	
1928	2,244	6,732										
1929	2,748	7,359										
1930	412	1,239				126	900			9	6,400	
1931	1,509	10,261						273	1,356			
1932						78	1,113	117	2,893	1	280	
1933						30	343					(e)247,900
1934	2,023	14,161				111	1,578					159,400
1935	2,288	16,400				1,144	14,947	100	800			413,700
1936	2,566	18,318		Pounds		923	13,578	221	1,596			605,500
1937	4,229	26,432		(b)48,163	7,394	4,272	43,250	85	817	8	8,147	876,540
1938	207	1,449		24,560	2,200					6	4,500	1,045,458
1939	3,694	21,267	123,598	1,225,585	151,469			396	3,688	1	816	1,121,553
1940	4,635	24,510	414,603	2,594,492	396,468	335	5,780	152	4,315	11	10,280	410,176
1941	12,651	49,110	516,037	3,185,077	445,911	2,372	42,679	(c)	(c)	98	88,470	925,196
1942	10,031	50,906	545,306	3,041,108	516,988	11,456	343,568	435	8,932	114	134,963	(f)
1943	69,437	308,290	641,294	1,114,166	189,408	29,595	919,878	48	985	342	549,515	(f)
1944	33,973	165,195	553,252	1,937,933	281,000	27,054	748,494			1,062	1,079,698	(f)
1945	14,147	67,575	1,135,444	1,667,951	290,557	5,755	160,752			489	411,663	(f)
1946	1,406	7,735	1,549,523	642,145	96,322	3,110	61,123			368	295,640	(f)
Total							5,533,526	17,012	472,930	5,360	3,660,380	

(*) Includes some titaniferous ore prior to 1923.

(a) See footnote above.

(b) Includes metal produced in Canada plus metal in ores exported, 1937 to 1946.

(c) 7,500 pounds of manganese metal valued at \$2,250 produced at a Nova Scotia mine.

(d) Sales, including MoS₂

consumed at Quyon, Quebec.

(e) First production.

(f) Not available for publication.

Historical Summary of Canada's Mineral Production—Dominion Totals —Continued

Year	Tungsten concentrates		Selenium		Tellurium		Cadmium		Bismuth		Calcium	
	lb.	\$	lb.	\$	lb.	\$	lb.	\$	lb.	\$	lb.	\$
1912..	28,000	(a)										
1913..												
1914..												
1915..												
1916..												
1917..	580	234										
1918..	27,000	11,700										
1919..												
1920..												
1921..												
1922..												
1923..												
1924..									12,863	27,913		
1925..									19,667	18,566		
1926..									6,440	6,440		
1927..									2,072	1,033		
1928..							491,894	341,374	14,002	5,067		
1929..							773,976	675,294	194,329	307,114		
1930..							456,582	337,871	12,732	6,366		
1931..			21,500	40,850			323,139	180,958	118,207	157,650		
1932..							65,425	26,824	16,855	7,340		
1933..			48,221	70,345			246,041	78,733	78,303	81,526		
1934..			104,924	171,311	5,130	25,599	293,611	95,665	253,644	301,215		
1935..			366,425	703,536	16,425	32,850	580,530	441,203	13,797	13,245		
1936..			350,857	621,017	35,591	62,997	785,916	699,465	364,165	360,523		
1937..			397,227	687,203	41,490	71,777	745,207	1,222,140	5,711	5,654		
1938..			358,929	622,742	48,237	82,967	699,138	561,799	9,516	9,754		
1939..		4,917	150,771	266,714	2,940	4,769	939,691	662,209	409,449	466,362		
1940..	8,825	7,303	179,860	343,533	3,491	5,607	908,127	1,056,152	58,529	81,004		
1941..	82,846	38,712	406,390	777,236	11,453	18,394	1,251,291	1,469,016	7,511	10,396		
1942..	520,981	408,275	495,369	951,108	11,084	17,735	1,148,963	1,355,776	347,556	479,627		
1943..	1,508,621	1,083,538	374,013	654,523	8,600	15,050	786,611	904,602	407,597	562,484		
1944..	886,745	245,780	298,592	537,466	10,661	18,657	526,970	579,667	123,875	154,844		
1945..	1,153	1,045	379,187	728,039	484	929	646,064	639,603	189,815	260,047	22,720	19,312
1946..			521,867	949,798	15,848	24,405	802,648	979,230	240,504	336,706	53,548	68,720
Total			4,454,672	8,125,421	211,434	381,736	12,471,324	12,397,581	2,907,139	3,660,876	76,268	88,032

(a) Value not recorded.

Year	Magnesium		Tin		Thallium		Indium	
	lb.	\$	lb.	\$	lb.	\$	oz.	\$
1941.....	10,905	2,944	64,744	33,667				
1942.....	808,718	355,836	1,237,863	643,689			470	4,710
1943.....	7,153,978	2,074,652	776,937	450,623				
1944.....	10,579,774	2,575,695	516,626	299,643	128	1,690		
1945.....	7,358,545	1,607,264	849,983	492,990				
1946.....	320,677	75,538	754,186	507,028				
Total	26,232,597	6,691,929	4,320,339	2,427,640	128	1,690	470	4,710

Aluminum Production in Canada from Imported Ores 1901-1946

Year	Pounds	Year	Pounds	Year	Pounds	Year	Pounds	Year	Pounds
1901....	283,737	1911....	9,679,980	1921....	6,335,083	1931....	68,103,008	1941....	427,746,554
1902....	1,983,252	1912....	12,029,046	1922....	12,867,305	1932....	39,585,847	1942....	681,192,951
1903....	1,750,599	1913....	14,065,028	1923....	24,245,766	1933....	35,532,104	1943....	991,499,296
1904....	2,302,178	1914....	14,550,959	1924....	27,243,004	1934....	34,865,362	1944....	924,130,162
1905....	2,590,329	1915....	18,368,524	1925....	31,105,293	1935....	46,342,747	1945....	431,425,942
1906....	4,696,949	1916....	21,184,791	1926....	38,910,914	1936....	59,280,250	1946....	388,234,533
1907....	5,921,299	1917....	22,088,067	1927....	82,735,938	1937....	93,812,965		
1908....	972,146	1918....	23,535,689	1928....	82,797,804	1938....	142,407,743		
1909....	6,083,695	1919....	21,582,264	1929....	63,439,528	1939....	165,680,869		
1910....	9,647,958	1920....	22,384,702	1930....	76,217,209	1940....	218,288,565		

Historical Summary of Canada's Mineral Production—Dominion Totals —Continued

Year	Mercury		Coal*		Petroleum		Natural Gas		Peat Fuel	
	pounds	\$	tons	\$	brls.	\$	M cu. ft.	\$	tons	\$
1785-1866.			2,863,826	4,905,462						
1867.			631,320	1,056,725						
1868.			623,392	1,073,061						
1869.			687,825	1,155,282						
1870.			752,635	1,243,139						
1871-1873.			3,033,152	5,073,331						
1874.			1,063,742	1,763,423						
1875.			1,039,974	1,747,016						
1876.			994,762	1,729,546						
1877.			1,036,670	1,794,415						
1878.			1,089,744	1,941,285						
1879.			1,126,497	2,050,639						
1880.			1,482,714	2,657,194						
1881.			1,597,106	2,688,821	368,987					
1882.			1,848,148	3,248,446	359,573					
1883.			1,818,684	3,109,635	472,866					
1884.			1,984,959	3,593,831	571,000					
1885.			1,920,977	3,417,807	587,563					
1886.			2,116,653	3,739,840	584,061	525,655				
1887.			2,429,330	4,388,206	713,728	556,708				
1888.			2,602,552	4,674,140	695,203	713,695				
1889.			2,658,303	4,894,287	704,690	653,600				
1890.			3,084,682	5,676,247	795,030	902,734				
1891.			3,577,749	7,019,425	755,298	1,010,211				
1892.			3,287,745	6,363,757	779,753	984,438	150,000			
1893.			3,783,499	7,359,080	798,406	874,255	376,233			
1894.			3,847,070	7,429,468	829,104	835,322	313,754			
1895.	5,396	2,343	3,478,344	6,739,153	726,138	1,086,738	423,032			
1896.	4,408	1,940	3,745,716	7,226,462	726,822	1,155,647	276,301			
1897.	684	324	3,786,107	7,303,597	709,857	1,011,546	325,873			
1898.			4,173,108	8,224,288	758,391	1,061,747	322,123			
1899.			4,925,051	10,283,497	808,570	1,202,020	387,271			
1900.			5,777,319	13,742,178	710,498	1,151,007	417,094	400	1,200	
1901.			6,486,325	12,699,243	622,392	1,008,275	339,476	220	600	
1902.			7,466,681	15,210,877	530,624	951,190	195,992	475	1,663	
1903.			7,960,364	15,942,833	486,637	1,048,874	202,210	1,100	3,300	
1904.			8,254,595	16,592,231	503,474	935,895	328,376	800	2,400	
1905.			8,687,948	17,520,263	634,095	856,028	379,561	80	260	
1906.			9,762,601	19,732,019	589,753	761,760	583,523	474	1,422	
1907.			10,511,426	24,381,842	788,872	1,057,088	515,032	50	200	
1908.			10,886,311	25,194,573	527,987	747,102	1,012,660	60	180	
1909.			10,501,475	24,781,236	420,755	559,604	1,207,029	60	240	
1910.			12,909,152	30,909,779	315,895	388,550	1,346,471	841	2,604	
1911.			11,323,388	26,467,646	291,092	357,073	1,917,678	1,463	3,817	
1912.			14,512,829	37,019,044	243,336	345,050	2,362,700	700	2,900	
1913.			15,012,178	37,334,940	228,080	406,439	3,309,381	2,600	10,100	
1914.			13,637,529	33,471,801	214,805	343,124	21,692,504	3,484,727	685	2,470
1915.			13,267,023	32,111,182	215,464	300,572	20,124,162	3,706,035	300	1,050
1916.			14,483,395	38,817,481	198,123	392,284	25,467,458	3,958,029	300	1,500
1917.			14,046,759	43,199,831	213,832	542,239	27,408,940	5,045,298		
1918.			14,977,926	55,192,896	304,741	885,143	20,140,309	4,350,940		
1919.			13,919,096	55,622,670	240,466	736,324	19,937,769	4,176,037	986	6,561
1920.			16,946,764	82,496,538	196,251	822,235	16,845,518	4,232,642	4,550	18,650
1921.			15,057,493	72,451,656	187,541	641,533	14,077,601	4,594,164	1,666	6,664
1922.			15,157,431	65,518,497	179,068	611,176	14,682,651	5,846,501	3,000	14,500
1923.			16,990,571	72,058,986	170,169	522,018	15,960,583	5,884,618		
1924.			13,638,197	53,593,988	160,773	467,400	14,881,336	5,708,636		
1925.			13,134,968	49,261,951	332,001	1,250,705	16,902,897	6,833,005	1,370	8,394
1926.	380	(a)	16,478,131	59,875,094	364,444	1,311,665	19,208,209	7,557,174		
1927.			17,426,861	61,867,463	476,591	1,516,043	21,376,791	8,043,010		
1928.			17,564,293	63,757,833	624,184	2,035,300	22,582,586	8,614,182	1,497	5,845
1929.			17,496,557	63,065,170	1,117,368	3,731,764	28,378,462	9,977,124	2,607	13,339
1930.			14,881,324	52,849,748	1,522,220	5,033,820	29,376,919	10,289,985	2,847	10,932
1931.			12,243,211	41,207,682	1,542,573	4,211,674	25,874,723	9,026,754	1,674	7,033
1932.			11,738,913	37,117,695	1,044,412	3,022,592	23,420,174	8,899,462	3,248	7,593
1933.			11,903,344	35,923,962	1,145,333	3,138,791	23,138,103	8,712,234	1,131	3,449
1934.			13,810,193	42,045,942	1,410,895	3,449,162	23,162,324	8,759,652	1,878	7,343
1935.			13,888,006	41,963,110	1,446,620	3,492,188	24,910,786	9,363,141	1,340	5,761
1936.			15,229,182	45,791,934	1,500,374	3,421,767	28,113,348	10,762,243	1,341	7,376
1937.			15,835,954	48,752,048	2,943,750	5,399,353	32,380,991	11,674,802	478	2,676
1938.	700	700	14,294,718	43,982,171	6,966,084	9,230,173	33,444,791	11,587,450	620	3,500
1939.	436	1,226	15,692,698	48,676,990	7,826,301	9,846,352	35,185,146	12,507,307	445	2,445
1940.	153,830	369,317	17,566,884	54,675,844	8,590,978	11,160,213	41,232,125	13,000,593	30	75
1941.	536,304	1,335,697	18,225,921	58,059,630	10,133,838	14,415,096	43,495,353	12,665,113	355	2,155
1942.	1,035,914	2,943,807	18,865,030	62,897,581	10,864,796	15,968,851	45,697,359	13,301,655	172	1,204
1943.	1,690,240	4,559,200	17,859,057	62,877,549	10,052,302	16,470,417	44,276,216	13,159,418	782	7,000
1944.	735,908	1,210,375	17,026,499	70,433,169	10,099,404	15,429,090	45,067,158	11,422,541	644	5,397
1945.			16,506,713	67,588,402	8,482,796	13,632,248	48,411,685	12,309,564	118	1,062
1946.			17,806,450	75,361,481	7,585,555	14,989,052	47,900,484	12,165,050	145	1,305
Total.....			720,661,719	2,244,667,184	117,502,582	191,569,425	298,610,856	43,532	186,165	

* For the years 1919 to 1946 the tonnage shown is the total output of all mines; for previous years the tonnage shown includes only sales, colliery consumption and coal used by the operators.

(a) No value recorded.

Historical Summary of Canada's Mineral Production—Dominion Totals —Continued

Year	Peat Moss		Actinolite		Asbestos		Barite		Bituminous Sands		Corundum	
	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$
1880.					380	24,700						
1881.					540	35,100						
1882.					810	52,650						
1883.					955	68,750						
1884.					1,141	75,097						
1885.					2,440	142,441	300	1,500				
1886.					3,458	206,251	3,864	19,270				
1887.					4,619	226,976	400	2,400				
1888.					4,404	255,007	1,100	3,550				
1889.					6,113	426,554						
1890.					9,860	1,260,240	1,842	7,543				
1891.					9,279	999,878						
1892.					6,082	390,462	315	1,260				
1893.					6,331	310,156						
1894.					7,630	420,825	1,081	2,830				
1895.					8,756	368,175						
1896.					12,250	429,856	145	715				
1897.			205	1,845	30,442	445,368	571	3,060				
1898.					23,785	491,197	1,125	5,533				
1899.					25,536	485,849	720	4,402				
1900.					29,141	748,431	1,337	7,605			3	300
1901.			521	3,126	40,217	1,259,759	653	3,842			387	46,415
1902.			550	4,400	40,416	1,148,319	1,096	3,957			768	84,465
1903.			550	3,108	41,677	929,757	1,163	3,931			703	77,510
1904.					48,465	1,226,352	1,382	3,702			993	109,545
1905.					68,263	1,503,259	3,360	7,500			1,644	149,153
1906.					82,185	2,060,143	4,000	12,000			2,274	204,973
1907.					90,426	2,505,042	1,344	3,000			1,892	177,922
1908.					90,773	2,573,335	4,312	19,021			1,089	100,398
1909.					87,300	2,301,775	179	1,120			1,491	162,492
1910.			30	330	102,215	2,573,603					1,870	198,680
1911.			67	736	127,414	2,943,108	50	400			1,472	161,873
1912.			92	1,000	136,301	3,137,279	464	5,104			1,960	239,091
1913.			66	720	161,086	3,849,925	641	5,410			1,177	137,036
1914.			119	1,304	117,573	2,909,806	612	6,169			548	72,176
1915.			220	2,420	136,842	3,574,985	550	6,875			262	33,138
1916.			250	2,750	154,149	5,228,869	1,368	19,393			67	10,307
1917.			120	1,320	153,781	7,230,383	3,490	54,027			188	32,153
1918.			228	2,508	158,259	8,970,797	640	10,165			137	26,112
1919.			80	880	159,236	10,975,369	468	8,154				
1920.			100	1,160	199,573	14,792,201	751	22,983			196	24,547
1921.			78	975	92,761	4,906,230	270	9,567			403	55,965
1922.			50	575	163,706	5,552,723	289	9,537				
1923.			53	583	231,482	7,522,506	409	8,548				
1924.			90	1,225	225,744	6,710,830	151	3,308	531	2,127		
1925.			40	500	273,524	8,977,546	95	2,259	1,148	4,594		
1926.			80	1,000	279,403	10,099,423	100	2,307	528	2,112		
1927.			86	1,075	274,778	10,621,013	56	1,268	2,706	10,824		
1928.			70	875	273,033	11,238,360	127	2,847	94	374		
1929.			30	375	306,055	13,172,581	105	2,341	989	3,956		
1930.			34	437	242,114	8,390,163	66	1,484	2,067	8,268		
1931.			35	456	164,296	4,812,886	16	363	1,015	4,060		
1932.					122,977	3,039,721			343	1,372		
1933.					158,367	5,211,177	20	60	466	1,662		
1934.			30	365	155,980	4,936,326			862	3,449		
1935.					210,467	7,054,614			40	160		
1936.					301,287	9,958,183						
1937.					410,026	14,505,791			35	142		
1938.					289,793	12,890,195						
1939.					364,472	15,859,212						
1940.	(a)	(a)			346,805	15,619,865	323	3,639	(b)	(b)		
1941.	27,803	644,253			477,846	21,468,840	6,890	74,416	(b)	(b)		
1942.	53,506	1,069,372			439,459	22,663,283	19,667	188,144	(b)	(b)		
1943.	64,360	1,461,422			467,196	23,169,505	24,474	279,253	(b)	(b)		
1944.	(c) 80,446	1,869,553			419,265	20,619,516	118,719	1,023,696	(b)	(b)	173	17,111
1945.	83,963	2,011,139			466,897	22,805,157	139,589	1,211,403	(b)	(b)	1,317	130,893
1946.	96,539	2,395,649			558,181	25,240,562	120,419	1,006,473	(b)	(b)	742	102,840
Total			3,874	36,048	10,106,017	406,604,237	471,446	4,092,453			21,756	2,354,095

(a) Prior to 1941 included in survey of manufactures.

(b) No sands sold as such; production included with crude petroleum.

(c) Includes some duplication resulting from the resale of moss purchased from other producers.

Historical Summary of Canada's Mineral Production—Dominion Totals —Continued

Year	Diatomite		Feldspar		Fluorspar		Graphite		Grindstones		Garnet	
	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$
1886.....							500	4,000	4,020	46,545		
1887.....							300	2,400	5,292	64,008		
1888.....							150	1,200	5,764	51,129		
1889.....							242	3,160	3,404	30,863		
1890.....			700	3,500			175	5,200	4,884	42,340		
1891.....			685	3,425			260	1,560	4,479	42,587		
1892.....			175	525			107	3,763	5,122	49,836		
1893.....			575	4,525					4,480	36,979		
1894.....									3,667	31,217		
1895.....			1,018	2,545			220	6,150	3,395	30,652		
1896.....	644	9,960	972	2,583			789	22,455	3,563	31,990		
1897.....	15	150	1,400	3,290			436	16,240	4,472	40,740		
1898.....	1,017	16,660	2,500	6,250			660	13,698	4,735	40,590		
1899.....	1,000	15,000	3,000	6,000			1,310	24,179	4,112	35,265		
1900.....	336	1,950	318	1,112			1,922	31,040	5,179	47,290		
1901.....	850	15,300	5,350	10,700			2,210	38,780	4,034	37,275		
1902.....	1,052	16,470	7,576	15,152			1,095	28,300	4,383	40,018		
1903.....	835	16,700	13,928	18,966			728	23,745	5,423	46,462		
1904.....	320	6,400	11,083	22,166			452	11,760	4,509	40,822		
1905.....	300	3,600	11,700	23,400	12	84	541	16,735	5,460	59,900		
1906.....			16,948	40,890			387	18,300	5,305	58,314		
1907.....	30	225	12,584	29,819			579	16,000	5,384	58,876		
1908.....	30	195	7,877	21,099			251	5,565	3,658	42,053		
1909.....			12,783	40,383			864	47,800	4,002	46,374		
1910.....	22	134	15,809	47,667	2	15	1,392	74,087	3,787	41,496		
1911.....	20	122	17,723	51,939	34	238	1,269	69,576	4,332	46,832		
1912.....	38	230	13,733	30,916	40	240	2,060	117,122	4,204	46,460		
1913.....	620	12,138	16,790	60,795			2,162	90,282	4,008	45,300		
1914.....	650	13,000	18,060	70,824			1,647	107,203	3,783	48,847		
1915.....	317	12,119	14,559	57,801			2,635	124,223	3,232	31,967		
1916.....	620	12,139	19,488	71,407	1,284	10,238	3,955	325,362	2,279	49,975		
1917.....	600	18,000	19,462	89,826	4,249	68,756	3,714	402,892	2,169	38,702		
1918.....	500	12,500	18,782	112,728	7,362	156,029	3,114	248,870	2,806	70,745		
1919.....	565	11,300	14,679	86,231	5,063	97,837	1,360	100,221	1,931	56,344		
1920.....	260	8,600	37,873	280,895	11,235	240,446	2,190	165,617	2,262	74,119		
1921.....	341	11,268	29,868	230,754	5,519	136,267	937	65,862	1,064	40,637		
1922.....	219	5,781	27,727	248,402	4,503	102,138	597	31,353	837	30,292		
1923.....	130	3,250	29,225	237,601	139	1,732	1,113	67,873	1,717	51,483	1,250	100,000
1924.....	33	838	44,804	358,540	76	1,343	1,334	76,117	2,031	69,111	360	7,200
1925.....			28,681	235,789	3,886	19,234	2,569	158,763	1,735	61,784		
1926.....			35,951	310,238			2,727	194,860	1,513	58,986		
1927.....	266	6,650	29,849	259,151			1,829	111,656	1,317	47,475	2	150
1928.....	368	8,960	31,897	284,942			1,097	57,041	1,250	45,901		
1929.....	429	10,330	37,527	340,471	17,870	268,120	1,461	103,174	1,038	37,401		
1930.....	554	13,247	26,796	268,469	80	1,240	1,535	96,392	235	9,874		
1931.....	1,610	32,789	18,343	186,961	40	620	548	32,149	198	8,164		
1932.....	1,496	29,509	7,047	81,982	32	464	346	18,483	200	9,336		
1933.....	1,789	36,648	10,658	105,117	73	1,064	405	18,367	161	7,079		
1934.....	1,372	54,910	18,302	147,281	150	2,100	1,518	71,424	353	14,543		
1935.....	823	33,140	17,742	144,330	75	900	1,782	79,781	373	14,501		
1936.....	615	13,650	17,846	164,475	75	900		88,812	360	15,352		
1937.....	643	18,606	21,346	178,222	150	2,550		125,343	251	12,407		
1938.....	398	13,842	14,058	129,293	217	3,906		41,590	285	12,790		
1939.....	301	10,388	12,500	112,309	240	4,995		61,684	284	12,190		
1940.....	248	7,957	21,455	187,623	4,454	59,317		94,038	290	11,858		
1941.....	344	9,935	26,040	244,284	5,534	97,767		132,924	170	8,500	16*	160
1942.....	365	9,088	22,270	213,941	6,199	146,039		117,904	200	8,000	17*	176
1943.....	98	3,331	23,858	237,771	11,210	318,424	1,903	197,431	162	6,000		
1944.....	13	437	23,509	227,632	6,924	217,701	1,582	171,166	225	12,000	3	90
1945.....	46	1,238	30,246	282,656	7,369	233,708	1,910	179,001	225	10,870		
1946.....	90	2,532	35,243	384,677	8,042	237,491	1,975	180,405	295	17,450	2	1,200
Total....	23,232	541,216	960,918	7,010,270	112,138	2,431,903		4,741,478	160,288	2,236,866	1,650	168,976

* Garnet schist.

Historical Summary of Canada's Mineral Production—Dominion Totals

—Continued

Year	Gypsum		Iron Oxides		Magnesitic Dolomite		Magnesium Sulphate		Manganese Bog	
	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$
1874	67,830	68,164								
1875	91,485	91,613								
1876	92,765	94,386								
1877	111,980	98,897								
1878	105,455	93,805								
1879	104,993	80,864								
1880	136,935	124,060								
1881	121,279	116,349								
1882	150,272	147,597								
1883	166,152	169,228								
1884	130,141	134,451								
1885	97,552	106,415								
1886	162,000	178,742	350	2,350						
1887	154,008	157,277	455	3,733						
1888	175,887	179,393	397	7,900						
1889	213,273	205,108	794	15,280						
1890	226,509	194,033	275	5,125						
1891	203,605	206,251	900	17,750						
1892	241,048	241,127	390	5,800						
1893	192,568	196,150	1,070	17,700						
1894	223,631	202,031	611	8,690						
1895	226,178	202,608	1,339	14,600						
1896	207,032	178,061	2,362	16,045						
1897	239,691	244,531	3,905	23,560						
1898	219,256	232,515	2,226	17,450						
1899	244,566	257,329	3,919	20,000						
1900	252,101	259,009	1,966	15,398						
1901	293,799	340,148	2,233	16,735						
1902	333,599	379,479	4,955	30,495						
1903	314,489	388,459	6,266	32,760						
1904	345,961	373,474	3,925	24,995						
1905	442,158	586,168	5,105	34,675						
1906	469,022	643,294	6,758	36,125						
1907	485,921	646,914	5,828	35,570						
1908	340,964	575,701	4,746	30,440	120	840				
1909	473,129	809,632	3,940	28,093	330	2,508				
1910	525,246	934,446	4,813	35,185	323	2,160				
1911	518,383	993,394	3,622	28,333	991	5,531				
1912	578,458	1,324,620	7,654	32,410	1,714	9,645				
1913	636,370	1,447,739	5,987	41,774	515	3,335				
1914	516,880	1,156,207	5,890	51,725	358	2,240				
1915	474,815	854,929	6,248	48,353	14,779	126,584				
1916	342,915	738,593	8,811	58,711	55,413	563,829				
1917	336,332	881,984	9,409	87,605	58,090	728,275	929	4,645		
1918	152,287	823,006	17,317	112,440	39,365	1,016,765	1,949	14,565		
1919	299,063	1,215,287	11,862	113,427	11,273	328,465	738	9,115		
1920	429,144	1,893,991	19,128	157,909	18,378	512,756	1,947	39,886		
1921	386,550	1,785,538	9,048	93,610	3,730	81,320	2,029	39,506		
1922	559,265	2,160,898	7,285	110,608	2,849	76,294	1,021	24,017		
1923	578,301	2,243,100	10,424	129,636	4,801	134,382	121	6,580		
1924	646,016	2,208,108	7,266	91,160	3,873	101,356				
1925	740,323	2,389,891	7,118	91,913	5,576	122,325				
1926	883,728	2,770,813	6,626	101,843	4,571	137,431				
1927	1,063,117	3,251,015	6,125	103,536	7,337	230,309				
1928	1,246,368	3,743,648	5,414	111,198	13,195	346,990			385	2,237
1929	1,211,689	3,345,696	6,518	115,932	18,809	491,170			301	1,830
1930	1,070,968	2,818,788	6,596	83,873	13,336	336,162			275	1,650
1931	863,752	2,111,517	5,520	49,205	11,411	295,579			77	462
1932	438,629	1,080,379	5,240	46,161	(e)	202,860				
1933	382,736	675,822	4,357	53,450	(e)	360,128	120	3,360		
1934	461,237	863,776	4,959	66,166	(e)	382,927	42	1,100		
1935	541,864	932,203	5,516	77,075	(e)	486,084	340	7,965		
1936	833,822	1,278,971	5,854	69,630	(e)	768,742	654	13,712		
1937	1,047,187	1,540,483	6,197	83,640	(e)	677,207	727	14,456		
1938	1,008,799	1,502,265	5,821	71,769	(e)	420,261	470	9,400		
1939	1,421,934	1,935,127	6,015	88,418	(e)	474,418	550	9,900		
1940	1,448,788	2,065,933	9,979	111,874	(e)	897,016				
1941	1,593,406	2,248,428	10,045	142,069	(e)	831,041	265	7,343		
1942	1,566,166	1,254,182	9,304	151,653	(e)	*1,059,374	1,140	38,760		
1943	446,848	1,381,468	8,401	135,893	(e)	1,260,056				
1944	596,164	1,511,978	8,599	150,250	(e)	1,139,281				
1945	839,781	1,783,290	10,314	172,053	(e)	1,278,596				
1946	1,810,937	3,671,503	12,695	152,268	(e)	1,225,593				
Total	35,555,493	74,022,279	356,722	3,884,024	17,179,835	13,042	244,310	1,038	6,179	

(e) Quantity not published since 1931.

* Includes value of brucite granules shipped from Wakefield, Quebec, to Canadian Refineries Ltd.

Historical Summary of Canada's Mineral Production—Dominion Totals

—Continued

Year	Mica		Mineral Waters		Natro-Alunite		Phosphate		Pulpstones	
	tons	\$	Imp. gals.	\$	tons	\$	tons	\$	tons	\$
1870.....							1,200	13,600		
1871.....							200	2,100		
1872.....										
1873.....										
1874.....										
1875.....										
1876.....										
1877.....										
1878.....										
1879.....							10,743	208,109		
1880.....							8,446	122,035		
1881.....							13,060	190,086		
1882.....							11,968	218,456		
1883.....							17,153	308,357		
1884.....							19,716	427,668		
1885.....							21,709	424,240		
1886.....		29,008					28,969	496,203		
1887.....		20,816					20,495	404,338		
1888.....	15	30,207	124,850	11,456			23,690	319,815		
1889.....		28,718	424,600	37,360			22,485	242,285		
1890.....		68,074	561,165	66,031			30,988	316,662		
1891.....		71,510	427,485	54,268			31,753	361,045		
1892.....		104,745	640,380	75,348			23,588	241,603		
1893.....		75,719	725,096	108,347			11,932	157,424	60	900
1894.....		45,581	767,460	110,040			7,890	61,962	120	1,400
1895.....		65,000	739,382	126,048			6,861	41,166	90	1,500
1896.....		60,000	706,372	111,736			1,822	9,565	80	1,230
1897.....		76,000	749,691	141,477			570	3,420	60	900
1898.....		118,375	555,000	100,000			908	3,984	100	1,600
1899.....		163,000		100,000			733	3,665	200	3,200
1900.....		166,000		75,000			3,000	18,000	375	7,000
1901.....		160,000		100,000			1,415	7,105	360	6,160
1902.....	1,059	135,904		100,000			1,033	6,280	547	8,415
1903.....		177,857		100,000			856	4,953	250	4,100
1904.....		160,777		100,000			1,329	8,214	115	1,840
1905.....		178,235		100,000			817	4,590	140	1,960
1906.....	574	303,913		100,000			1,300	8,425	68	1,875
1907.....	774	312,599		100,000			850	6,375	40	600
1908.....	436	139,871		151,953			824	6,018		
1909.....	369	147,782		175,173			1,596	14,794	158	4,725
1910.....	758	190,385		199,563			998	8,054	240	6,640
1911.....	590	128,677		223,758			1,478	12,578	125	3,700
1912.....	580	143,976		172,465			621	5,206	160	3,960
1913.....	1,104	194,304		173,677			164	1,640	125	4,000
1914.....	595	109,061		134,111			385	3,643	100	3,400
1915.....	417	91,905		115,274			954	7,275	40	4,000
1916.....	1,208	255,239		127,806			217	2,502		
1917.....	1,166	358,851		145,814			203	2,514		
1918.....	747	271,550		154,468			149	1,486	47	2,750
1919.....	2,754	273,788		71,015			140	1,200	180	8,400
1920.....	2,203	376,022		24,582			24	331	14	420
1921.....	702	70,063	328,723	21,716	30	1,500			125	10,000
1922.....	3,349	152,293	221,433	14,220	50	2,500	30	450	200	22,000
1923.....	3,525	326,974	232,451	16,455	15	750	190	1,796	150	12,000
1924.....	4,091	357,272	209,353	15,421			30	600	260	25,100
1925.....	4,020	261,463	190,134	28,413					624	58,113
1926.....	2,545	229,204	215,356	29,721	20	1,000	16	189	781	57,781
1927.....	2,738	174,377	303,530	14,624			40	800	1,155	89,541
1928.....	3,660	87,168	260,045	33,498	7	248	151	1,717	911	75,242
1929.....	4,053	118,549	321,905	16,139			641	8,276	581	52,659
1930.....	1,170	96,004	227,141	24,481			1,185	5,380	754	62,336
1931.....	1,339	54,066	217,408	13,234			40	760	573	49,897
1932.....	309	6,828	76,714	7,170					342	27,305
1933.....	944	49,284	38,818	5,441			1,316	12,333	60	3,500
1934.....	998	97,071	97,440	17,738			2,214	5,475	214	9,870
1935.....	628	82,038	146,516	16,590			81	683	523	27,225
1936.....	801	74,556	154,286	18,616			186	1,103	288	14,109
1937.....	945	133,731	225,019	20,686			525	4,927	87	4,500
1938.....	518	80,989	188,309	21,619			100	900	87	4,875
1939.....	1,068	147,321	123,679	19,105			208	1,886		
1940.....	975	237,145	140,663	20,892			157	1,712		
1941.....	1,743	335,288	181,064	72,531			358	4,039		
1942.....	3,010	383,567	157,085	74,505			2,467	33,376		
1943.....	4,025	553,856	139,611	67,541			1,264	17,431		
1944.....	3,342	841,026	156,150	79,031			1,451	18,385		
1945.....	3,522	233,270	244,761	126,499			482	6,716		
1946.....	4,360	199,039	217,842	122,404			299	4,350		
							57	869		
Total.....		10,624,861		4,610,880	122	5,998	348,740	4,743,320	11,509	690,778

Historical Summary of Canada's Mineral Production—Dominion Totals —Continued

Year	Nepheline Syenite	Quartz*		Salt		Sharpening Stones		Silica Brick		Sodium Carbonate		
		\$	tons	\$	tons	\$	tons	M	\$	tons	\$	
1886					62,359	227,195						
1887					60,173	166,394						
1888					59,070	185,460						
1889					32,832	129,547						
1890		200	1,000		43,754	198,857						
1891					45,021	161,179						
1892					45,486	162,041						
1893		100	500		62,324	195,926						
1894					57,199	170,687						
1895					52,376	160,455						
1896		10	50		43,960	169,693						
1897					51,348	225,730						
1898		284	570		57,142	248,639	33	985				
1899		600	1,260		59,339	254,390	24	1,000				
1900					62,055	279,458						
1901					59,428	262,328						
1902					64,456	292,581						
1903					62,452	297,517						
1904					69,477	321,778						
1905					67,340	320,858	12	600				
1906		48,376	65,765		76,720	329,130	18	900				
1907		56,585	124,148		72,697	342,315	30	1,500				
1908		44,741	52,830		79,975	378,798	27	1,350				
1909		56,924	71,285		84,037	415,219	33	1,650				
1910		88,205	91,951		84,092	409,624	36	1,800				
1911		60,526	83,865		91,582	443,004	54	2,000				
1912		100,242	195,216		95,053	459,582	38	1,300				
1913		78,261	169,842		100,791	491,280	74	2,425				
1914		54,148	84,583		107,038	493,648	115	1,254				
1915		127,108	205,153		119,900	600,226	281	3,615				
1916		136,745	251,226		132,903	717,653	224	2,614				
1917		216,288	496,182		138,909	1,047,792	307	4,302				
1918		268,155	629,813		131,727	1,285,039	56	3,500				
1919		94,991	527,635		148,301	1,397,929	45	3,392				
1920		128,295	467,821		209,855	1,544,724	56	3,987				
1921		100,350	312,947		164,658	1,673,685	17	1,430		197	14,775	
1922		109,947	208,598		181,794	1,628,323	18	1,450		202	3,027	
1923		264,076	599,250		202,397	1,713,516	35	3,500		265	3,975	
1924		150,896	323,156		207,979	1,374,780	36	3,600		510	5,173	
1925		197,224	363,612		233,746	1,410,697	46	4,600		1,120	8,140	
1926		232,082	553,161		262,547	1,480,149	27	2,700	2,665	130,702	595	5,370
1927		233,984	496,364		268,672	1,614,667	23	2,300	1,791	79,527	805	9,995
1928		282,522	523,933		299,445	1,495,971	24	2,400	3,224	155,502	519	4,922
1929		265,949	561,527		330,264	1,578,086	155	6,617	3,951	173,581	600	8,100
1930		226,200	418,127		271,695	1,694,631	22	2,250	2,418	97,379	364	4,550
1931		195,724	303,158		259,047	1,904,149	81	2,634	900	35,746	712	7,351
1932		189,132	276,147		263,543	1,947,551	68	2,899	93	4,304	495	5,450
1933		185,783	297,820		280,115	1,939,874	123	4,970	636	23,185	559	5,773
1934		272,563	482,265		321,753	1,954,953	111	4,710	2,528	85,945	244	1,920
1935		233,002	424,882		360,343	1,880,978	47	5,400	2,461	96,194	242	2,430
1936		37,426	1,046,649		391,316	1,773,144	122	4,872	2,393	97,285	192	1,677
1937		121,481	1,377,448	1,129,011	458,957	1,799,465	74	4,147	3,744	181,126	286	2,574
1938		142,737	1,380,011		961,617	1,912,913	21	3,408	1,788	100,403	252	2,268
1939		140,148	1,582,935	1,100,214	440,050	2,486,632	20	3,088	2,493	124,807	300	2,400
1940		117,849	1,858,302	1,203,527	464,714	2,823,269	(a) 51	2,685	3,438	182,786	220	1,760
1941		227,583	2,052,878	1,366,187	500,845	3,196,165	18	3,000	4,111	238,433	186	1,488
1942		246,893	1,738,174	1,538,162	653,672	3,844,187	16	2,000	4,273	263,006	256	2,048
1943		292,010	1,776,749	1,608,448	687,686	4,379,378	2	225	4,165	295,505	468	5,148
1944		217,989	1,740,262	1,658,409	695,217	4,074,021			3,997	312,092	44	484
1945		275,766	1,513,628	1,535,458	673,076	4,054,720			4,208	317,263	286	3,146
1946		229,198	1,413,378	1,554,798	537,985	3,628,165			2,902	197,804		
Total		2,049,080	22,180,632	23,919,254	12,687,182	74,048,745	2,620	113,059	58,179	3,192,575	9,919	113,944

* Commencing in 1936 includes low-grade fluxing sand.

(a) Includes 33 tons grinding pebbles valued at \$165, from Saskatchewan.

Historical Summary of Canada's Mineral Production—Dominion Totals —Continued

Year	Sodium Sulphate		Sulphur*		Talc and Soapstone		Volcanic Dust		Strontium Minerals	
	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$
1886...			42,906	193,077	50	400				
1887...			38,043	171,194	100	800				
1888...			63,479	285,656	140	280				
1889...			72,225	307,292	195	1,170				
1890...			49,227	123,067	917	1,239				
1891...			25,542	203,193						
1892...			26,000	179,310	1,374	6,240				
1893...			22,245	175,626	717	1,920				
1894...			16,616	121,581	916	1,640				
1895...			14,021	102,594	475	2,138				
1896...			13,823	101,155	410	1,230				
1897...			15,953	116,730	157	350				
1898...			13,209	128,872	405	1,000				
1899...			11,352	110,748	450	1,960				
1900...			16,413	155,164	1,420	6,365				
1901...			14,457	130,544		259				
1902...			14,603	138,939	689	1,804				
1903...			13,933	127,713	990	2,739				
1904...			15,244	134,033	840	1,875				
1905...			13,669	125,486	500	1,800				
1906...			17,525	169,990	1,234	3,030				
1907...			18,960	212,491	1,534	4,602				
1908...			19,408	224,524	1,016	3,048				
1909...			26,504	222,814	4,350	10,300				
1910...			22,087	187,062	7,112	22,308				
1911...			33,893	365,820	7,300	22,100				
1912...			33,426	314,081	8,270	23,132				
1913...			65,012	521,181	12,250	45,980				
1914...			93,609	744,508	10,808	40,418				
1915...			116,157	985,190	11,585	40,554				
1916...			116,975	1,084,095	13,104	49,423				
1917...			155,453	1,610,762	15,803	76,539				
1918...			164,269	1,705,219	18,169	119,197				
1919...			65,674	522,704	18,642	116,295				
1920...	811	19,496	67,608	719,110	21,671	166,934			48	336
1921...	623	18,850	12,213	116,326	10,124	144,565			75	2,675
1922...	504	11,980	6,900	74,303	13,195	138,458				
1923...	733	10,189	11,073	113,020	10,366	150,507				
1924...	1,083	6,004	9,742	95,620	11,332	154,480				
1925...	3,876	19,380	7,587	58,899	14,474	205,835	245	1,103		
1926...	6,775	13,550	8,975	63,899	15,767	217,195	160	1,380		
1927...	5,659	11,319	25,229	198,388	16,521	236,105	90	630		
1928...	6,016	68,804	38,589	321,033	16,058	219,358	105	735		
1929...	5,018	64,112	42,781	350,843	16,698	229,198	485	9,795		
1930...	31,571	293,847	37,780	314,835	27,247	186,216	300	6,000		
1931...	44,957	421,097	50,107	429,457	21,916	157,083	242	4,840		
1932...	22,466	271,736	53,172	470,014	13,275	159,038	128	2,560		
1933...	50,080	485,416	57,373	510,299	16,829	190,836	180	3,600		
1934...	66,821	587,986	51,537	515,502	15,532	180,777	118	2,360		
1935...	44,817	343,764	67,446	634,235	15,301	171,532	31	620		
1936...	75,598	552,681	122,132	1,033,055	16,587	177,270				
1937...	79,884	618,028	130,913	1,154,992	15,939	163,814				
1938...	63,009	553,307	112,395	1,044,817	13,814	144,848				
1939...	71,485	628,151	211,278	1,668,025	18,241	170,066				
1940...	94,260	829,589	170,630	1,298,018	23,791	229,639				
1941...	115,608	931,554	260,023	1,702,786	34,632	360,809				
1942...	131,258	1,079,692	303,714	1,994,891	29,868	310,824				
1943...	107,121	1,025,151	257,515	1,753,425	26,163	266,685				
1944...	102,421	987,842	248,088	1,755,739	32,597	357,249	50	257		
1945...	93,068	884,322	250,114	1,881,321	27,088	294,888				
1946...	105,919	1,117,683	234,771	1,784,666	29,353	303,684				
Total..	1,331,441	11,855,530			666,560	6,350,611	2,134	33,880	150	3,291

* From 1891 to 1927 figures show sulphur content of pyrites shipped. Since 1927 figures include sulphur in pyrites shipped plus sulphur recovered from smelter gases. 1886 to 1890 inclusive tonnage of pyrites shipped.

Historical Summary of Canada's Mineral Production—Dominion Totals

—Continued

Year	Clay Products	Cement		Lime		Sand and Gravel	
	\$	Brls.	\$	tons	\$	tons	\$
1886	1,126,057				283,755	124,865	24,226
1887	1,398,907	69,843	81,909		394,859	180,860	30,307
1888	1,494,073	50,668	35,593		339,951	260,929	38,398
1889	1,652,334	90,474	69,790		362,848	283,044	52,647
1890	2,041,101	102,216	92,405		412,308	342,158	65,518
1891	1,802,932	93,479	108,561		251,215	243,724	59,501
1892	2,177,938	117,408	147,663		411,270	297,878	85,329
1893	2,619,590	158,597	194,015		900,000	329,116	121,795
1894	2,560,236	108,142	144,637		900,000	324,656	86,940
1895	2,487,248	128,294	173,675		700,000	277,162	118,359
1896	2,287,962	149,090	201,651		650,000	224,769	80,110
1897	2,325,903	205,213	275,273		650,000	152,963	76,729
1898	2,690,974	250,209	397,580		650,000	165,954	90,498
1899	2,988,099	396,753	633,291		800,000	242,450	101,640
1900	3,195,105	417,552	662,910		800,000	197,558	101,666
1901	3,382,706	450,394	660,030		830,000	197,302	117,465
1902	3,625,489	722,525	1,127,550		892,000	159,793	119,120
1903	4,034,289	719,993	1,225,247		900,000	355,792	124,006
1904	3,841,560	967,172	1,338,239		780,000	399,809	189,803
1905	4,709,842	1,360,732	1,924,014		750,000	306,935	152,805
1906	5,072,635	2,128,374	3,170,859	183,064	1,009,177	336,550	139,712
1907	5,772,117	2,441,868	3,781,371	166,436	974,595	298,095	119,853
1908	4,500,702	2,666,333	3,709,954	126,051	712,947	298,954	161,887
1909	6,450,840	4,067,709	5,345,802	195,752	1,132,756	481,584	256,166
1910	7,629,956	4,753,975	6,412,215	204,685	1,137,079	624,824	407,774
1911	8,359,933	5,692,915	7,644,937	263,673	1,517,599	573,494	408,110
1912	10,575,869	7,132,732	9,106,556	296,654	1,844,849		1,512,099
1913	9,504,314	8,658,805	11,019,418	264,547	1,609,398		2,258,874
1914	6,871,957	7,172,480	9,187,924	246,000	1,360,628		2,505,310
1915	3,914,488	5,681,032	6,977,024	176,654	1,015,702		1,624,767
1916	4,120,805	5,369,560	6,547,728	192,246	1,091,463	8,156,207	1,838,320
1917	4,779,038	4,768,488	7,724,246	229,851	1,558,487	9,182,417	2,326,249
1918	4,583,489	3,591,481	7,076,503	222,738	1,876,025	11,262,282	2,867,018
1919	7,906,366	4,995,257	9,802,433	250,163	2,310,607	10,364,481	2,680,460
1920	10,664,929	6,651,980	14,798,070	329,957	3,818,553	11,530,795	4,201,067
1921	8,857,818	5,752,885	14,195,143	240,767	2,781,197	11,574,862	2,537,249
1922	11,438,456	6,943,972	15,438,481	314,054	3,165,005	11,666,374	3,502,935
1923	10,483,016	7,543,589	15,064,661	351,236	3,266,608	12,752,515	3,016,518
1924	9,215,077	7,498,624	13,398,411	319,793	3,178,541	11,603,500	3,181,083
1925	9,529,691	8,116,597	14,046,704	358,979	3,387,652	11,018,647	3,220,410
1926	10,357,323	8,707,021	13,013,283	413,901	3,781,484	17,112,798	4,941,434
1927	11,173,189	10,065,865	14,391,937	444,753	3,923,388	22,952,819	6,055,601
1928	12,381,718	11,023,928	16,739,163	508,889	4,534,568	28,102,817	5,809,431
1929	13,904,643	12,284,081	19,337,235	674,087	5,908,610	27,846,945	7,317,814
1930	10,593,578	11,032,538	17,713,067	490,802	4,088,698	28,547,511	8,344,913
1931	7,841,288	10,161,658	15,826,243	444,785	2,764,415	21,748,586	6,651,165
1932	3,650,218	4,498,721	6,930,721	320,650	2,394,537	21,469,942	4,484,285
1933	2,262,835	3,007,432	4,536,935	323,540	2,432,306	11,738,823	4,035,477
1934	2,680,410	3,783,226	5,667,946	368,113	2,745,797	14,554,159	6,389,440
1935	3,012,563	3,648,086	5,580,043	405,419	2,925,791	21,213,489	6,921,399
1936	3,471,027	4,508,718	6,908,192	468,401	3,335,970	27,001,301	10,492,696
1937	4,516,859	6,168,971	9,095,867	549,353	3,524,917	32,223,882	12,002,554
1938	4,536,084	5,519,102	8,241,350	486,922	4,003,514	31,294,341	11,241,102
1939	5,151,236	5,731,264	8,511,211	552,209	5,194,555	31,375,415	11,759,245
1940	6,344,547	7,559,648	11,775,345	716,730	6,357,941	31,604,806	10,375,723
1941	7,575,336	8,368,711	13,063,588	860,885	6,530,839	26,349,907	9,005,857
1942	7,081,723	9,126,041	14,365,237	834,830	6,832,992	25,744,469	9,005,857
1943	6,608,193	7,302,289	11,599,033	907,768	885,142	28,399,986	10,280,119
1944	6,997,425	7,190,851	11,621,372	832,253	6,525,038	29,750,703	10,568,363
1945	8,913,092	8,471,679	14,246,480	840,799	7,074,940	39,949,994	15,529,700
1946	12,207,367	11,560,483	20,122,503				
Total.....	353,875,125	277,907,723	443,229,224		117,006,870		215,774,751

DOMINION BUREAU OF STATISTICS

Historical Summary of Canada's Mineral Production—Dominion Totals

—Concluded

Year	Limestone (a)		Sandstone		Granite		Marble		Slate	
	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$
1886		\$ 650,384			6,062	63,309	501	9,900	5,345	64,675
1887		581,367			21,217	142,506	242	6,224	7,357	89,000
1888		664,825			21,352	147,305	191	3,100	5,314	90,689
1889		937,000			10,197	79,624	83	980	6,935	119,160
1890		984,787			13,307	65,985	780	10,776	6,368	100,250
1891		723,004			13,637	70,050	240	1,752	5,000	65,000
1892		633,188			24,302	89,326	340	3,600	5,180	69,070
1893		1,131,006			22,521	94,393	590	5,100	7,112	90,825
1894		1,269,645			16,392	109,936				75,550
1895		1,136,603			19,238	84,833	200	2,000		58,900
1896		1,042,850			18,717	106,709	224	2,405		53,370
1897		1,037,448			10,345	61,934				42,800
1898		1,335,403			23,897	81,073				40,791
1899		1,551,886			13,418	90,542				33,406
1900		1,564,582				80,000				12,100
1901		1,837,737				155,000				9,980
1902		2,127,055				210,000			715	19,200
1903		2,230,939				200,000				22,040
1904		2,114,315				150,000			5,510	23,247
1905		2,072,758				226,305			5,277	21,568
1906		2,084,056				278,419				24,446
1907		1,832,550			151,136	194,712			4,335	20,056
1908		1,681,293				282,320		125,000	2,950	13,496
1909		2,139,691		374,179		454,824		158,441	4,000	19,000
1910		2,249,576		502,148		739,516		158,779	3,959	18,492
1911		2,594,926		451,183		1,119,865		162,783	1,833	8,248
1912		2,762,936		329,352		1,373,119		260,764	1,894	8,939
1913		3,204,091		396,782		1,653,791		249,975	1,432	6,444
1914		2,672,781		487,140		2,176,602		132,833	1,075	4,837
1915		2,312,081		249,336		1,525,553		158,027	397	2,030
1916		2,224,091		146,244		1,247,267		118,810	1,262	6,223
1917		2,283,659		261,256		639,412		55,820	1,422	7,789
1918		2,342,403		102,750		590,871		550	933	5,124
1919		3,074,815		86,577		850,563		213,982	1,632	10,853
1920		5,665,693		165,149		1,508,916		240,593		14,200
1921	3,322,024	5,155,046	28,426	78,036	319,398	937,894	1,650	172,720		22,325
1922	3,152,124	4,175,941	25,221	80,908	457,925	1,486,250	1,912	231,894	1,899	14,871
1923	3,687,663	4,475,921	22,766	66,547	398,432	1,159,303	2,473	201,518	1,836	17,289
1924	4,249,061	4,831,684	94,603	240,273	419,971	1,013,345	4,379	322,455		
1925	4,643,853	5,049,563	87,502	145,757	971,718	2,014,535	3,046	254,922		
1926	5,288,745	5,657,328	44,127	112,347	1,064,423	1,574,627	5,295	521,572		
1927	6,438,379	7,145,917	132,799	232,703	730,009	1,383,557	5,209	503,037		
1928	6,949,420	7,267,437	100,951	223,236	1,195,810	2,366,946	7,753	414,682		
1929	7,720,840	8,172,681	159,407	398,974	1,728,165	3,080,815	14,012	414,062		
1930	7,732,675	8,075,616	384,610	769,060	1,851,132	3,379,951	26,089	809,582	150	3,000
1931	6,262,430	6,305,538	924,101	1,332,883	1,190,887	2,763,050	20,442	668,713	250	5,000
1932	2,087,241	3,227,715	500,480	349,458	490,822	1,110,582	12,379	250,706	250	3,750
1933	2,572,911	2,142,516	99,043	108,562	258,723	679,585	10,897	65,913	250	3,750
1934	3,747,779	3,157,832	115,169	143,283	200,285	781,739	13,783	69,475	738	4,802
1935	3,631,665	3,253,573	342,824	838,005	326,354	1,126,287	15,975	85,369	1,129	4,329
1936	3,731,548	3,143,872	285,508	495,856	941,743	1,319,313	22,866	169,698	1,247	5,414
1937	5,542,806	4,673,942	235,165	343,871	1,135,099	1,827,433	21,642	88,595	900	5,519
1938	4,288,507	3,864,619	101,854	218,405	705,307	1,379,417	19,375	87,274	979	6,311
1939	4,149,589	3,817,551	176,265	331,830	1,102,395	2,119,501	14,124	200,054	1,149	6,760
1940	6,108,591	5,126,075	176,475	305,543	1,147,747	1,884,410	13,739	75,409	1,113	7,522
1941	7,151,049	6,057,727	109,885	305,528	600,922	1,498,786	17,649	126,081	1,296	12,562
1942	6,442,583	6,468,525	153,865	226,810	1,366,425	1,946,249	13,824	88,209	1,369	16,801
1943	6,265,181	6,105,749	164,163	250,603	750,422	1,522,072	11,848	68,022	1,336	17,733
1944	5,565,286	5,528,450	146,766	223,453	209,964	1,303,790	11,829	85,374	1,147	18,101
1945	5,677,192	6,284,379	21,430	406,397	221,630	1,284,748	13,388	113,337	1,915	17,839
1946	7,217,600	8,178,513	495,777	778,213	319,354	2,006,297	21,796	201,817	1,733	20,871
Total		*170,870,462		*12,618,727		59,895,073		8,372,384		1,486,356

* Total value from 1909 to 1946.

(a) Exclusive of limestone used in making cement and lime.

Values of the Mineral Production of Canada, by Provinces, since 1932

Year	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba
	\$	\$	\$	\$	\$
1932.....	16,201,279	2,223,505	25,638,466	85,910,030	9,058,365
1933.....	16,966,183	2,107,682	28,141,482	110,205,021	9,026,951
1934.....	23,310,728	2,156,151	31,269,945	145,555,871	9,776,934
1935.....	23,183,128	2,821,027	39,124,696	188,934,269	12,052,417
1936.....	26,672,278	2,587,791	49,736,919	184,532,892	11,315,527
1937.....	30,314,188	2,763,643	65,160,215	230,042,517	15,751,645
1938.....	26,253,645	3,502,565	68,965,594	219,801,994	17,173,002
1939.....	30,746,200	3,949,433	77,335,998	232,519,948	17,137,930
1940.....	33,318,587	3,435,916	86,313,491	261,433,349	17,828,522
1941.....	32,569,867	3,690,375	99,651,044	267,435,727	16,689,867
1942.....	32,733,165	3,609,158	104,300,010	259,114,946	14,345,046
1943.....	29,979,837	3,676,834	101,610,678	232,948,959	13,412,266
1944.....	33,981,977	4,133,902	90,182,553	210,706,307	13,830,406
1945.....	32,220,659	4,182,100	91,518,120	216,541,856	14,429,423
1946.....	35,350,271	4,813,166	92,785,148	191,544,429	16,403,549

Year	Saskat- chewan	Alberta	British Columbia	Yukon	Northwest Territories (*)
	\$	\$	\$	\$	\$
1932.....	1,681,728	21,174,061	27,326,173	1,993,195	21,423
1933.....	2,477,425	19,702,953	30,794,504	2,041,223	279,729
1934.....	2,977,061	20,228,851	41,206,965	1,628,879	199,604
1935.....	3,816,943	22,289,681	48,692,050	1,302,308	541,638
1936.....	6,970,397	23,305,726	54,407,036	2,220,372	775,834
1937.....	10,271,463	25,597,117	73,555,798	3,784,528	994,518
1938.....	7,782,847	28,966,272	64,549,130	3,959,570	1,614,076
1939.....	8,794,090	30,691,617	65,216,745	4,961,321	3,248,777
1940.....	11,505,858	35,092,337	74,134,485	4,118,333	2,594,157
1941.....	15,020,555	41,364,385	76,841,180	3,117,992	3,860,298
1942.....	20,578,749	47,359,831	77,247,932	3,453,568	3,976,267
1943.....	26,735,984	48,941,210	68,442,386	1,625,819	2,679,993
1944.....	22,291,848	51,066,662	57,246,071	939,319	1,440,069
1945.....	22,336,074	51,753,237	64,063,842	1,239,058	470,812
1946.....	24,480,900	60,082,513	74,622,846	1,693,904	1,039,525

* Values of pitchblende products not included since 1941.

Historical Summary of the Mineral Production of Nova Scotia

	Antimony		Arsenic		Barite		Clay products	Coal	
	pounds	\$	pounds	\$	tons	\$	\$	tons	\$
1866.....								(c) 2,049,416	4,139,714
1867.....								596,332	931,769
1868.....								574,106	897,041
1869.....								647,727	1,012,074
1870.....								719,211	1,123,767
1871.....								754,827	1,179,417
1872.....								1,003,806	1,568,446
1873.....								930,613	1,454,084
1874.....								837,755	1,308,991
1875.....								880,215	1,375,339
1876.....								875,994	1,368,741
1877.....								866,220	1,353,469
1878.....								1,177,669	1,840,108
1879.....								1,280,050	2,000,079
1880.....								1,524,947	2,382,730
1881.....								1,578,609	2,466,576
1882.....								1,543,829	2,412,233
1883.....							50,630	1,547,990	2,418,735
1884.....							43,746	1,698,018	2,653,152
1885.....							56,995	1,858,596	2,904,037
1886.....								1,942,231	3,034,735
1887.....							60,520	1,918,827	2,998,167
1888.....							54,755	2,181,033	3,407,864
1889.....							93,611	2,267,919	3,543,624
1890.....							*	2,159,389	3,374,046
1891.....								2,444,924	3,820,194
1892.....								2,527,982	3,949,970
1893.....								2,225,145	3,476,790
1894.....					145	715	*	2,508,579	3,919,655
1895.....					571	3,060	*	2,493,554	3,896,179
1896.....							†173,280	2,563,180	4,004,970
1897.....							†110,695	3,148,822	5,622,898
1898.....							†103,210	3,623,536	8,088,250
1899.....					653	3,842	†103,695	4,158,068	6,496,982
1900.....					1,096	3,957	†152,025	5,161,316	9,216,636
1901.....					1,163	3,931	†150,100	5,653,338	10,095,246
1902.....					1,382	3,702	†157,762	5,596,241	9,993,288
1903.....					3,360	7,500		5,646,583	10,083,184
1904.....					4,000	12,000		6,220,505	11,108,044
1905.....					1,344	3,000		6,354,133	12,764,999
1906.....					4,312	19,021		6,652,539	13,364,476
1907.....					179	1,120		5,652,089	11,354,643
1908.....							204,782	6,431,142	12,919,705
1909.....							274,249	7,004,420	14,071,379
1910.....					464	5,104		7,733,888	17,374,750
1911.....					641	6,410		7,980,073	17,812,663
1912.....					612	6,169		7,370,924	16,452,955
1913.....	(b) 2,576,000	77,300			560	6,875		7,463,370	16,659,308
1914.....					1,368	19,393		6,912,140	18,514,662
1915.....					3,490	54,027		6,327,091	19,410,737
1916.....					580	9,145		5,818,562	21,095,470
1917.....					468	8,154		5,720,373	22,078,726
1918.....					751	22,983		6,429,291	32,238,129
1919.....					270	9,567		5,734,928	27,782,050
1920.....					289	9,537		5,569,072	24,628,921
1921.....			45,000	2,250	209	4,868		6,597,938	28,170,458
1922.....			381,092	15,244	151	3,308	†359,288	5,557,441	15,826,680
1923.....					95	2,259	†425,710	6,842,978	22,280,554
1924.....					100	2,307	6,747,477	7,071,766	26,845,226
1925.....			35,000	700	56	1,268		7,071,766	27,194,671
1926.....					127	2,847		6,743,504	27,427,556
1927.....					105	2,341		7,056,133	28,071,956
1928.....					66	1,484		6,252,532	24,528,890
1929.....					16	363		4,955,563	19,016,720
1930.....								4,084,581	15,167,793
1931.....								4,557,590	15,969,793
1932.....								6,341,625	21,860,093
1933.....								5,822,075	20,391,227
1934.....								6,649,102	22,973,281
1935.....	(a) 48,163	7,394						7,256,954	25,640,819
1936.....	(a) 24,560	2,200						6,236,417	22,523,802
1937.....	(a) 1,200	148						339,952	25,611,271
1938.....					25	162		490,543	28,766,195
1939.....					6,561	72,468		529,435	28,446,204
1940.....					17,750	172,060		618,441	29,116,118
1941.....					22,550	263,419		478,571	27,121,861
1942.....					106,106	970,774		402,694	30,728,535
1943.....					108,434	1,165,623		433,455	28,350,278
1944.....					117,691	987,473		671,466	30,253,654
1945.....									
1946.....									
Total.....		87,042	461,092	18,194	407,780	3,872,136	16,093,467	342,953,022	1,040,981,294

* No production recorded, or production not available by provinces.

(a) Metal content of ore.

(b) Ore.

(c) From 1785 to 1866.

† Includes Prince Edward Island production.

Historical Summary of the Mineral Production of Nova Scotia—Continued

—	Copper		Diatomite		Gold		Grindstones		Gypsum (a)	
	pounds	\$	tons	\$	fine oz.	\$	tons	\$	tons	\$
1861.					6,863	141,871				
1862.					13,180	272,448				
1863.					18,883	390,349				
1864.					24,011	496,357				
1865.					23,776	491,491				
1866.					25,763	532,563				
1867.					19,377	400,555				
1868.					16,855	348,427				
1869.					18,740	387,392				
1870.					18,139	374,972				
1871.					12,352	255,349				
1872.					11,180	231,122				
1873.					8,623	178,244			67,830	68,164
1874.					10,576	218,629			86,065	86,193
1875.					11,300	233,585			87,720	87,590
1876.					15,925	329,205			106,950	93,867
1877.					11,864	245,253			88,631	76,695
1878.					12,980	268,328			95,623	71,353
1879.					10,472	257,823			125,685	111,533
1880.					12,147	209,755			110,303	100,284
1881.					13,307	275,090			133,426	121,070
1882.					14,571	301,207			145,448	132,534
1883.					15,168	313,554			107,653	100,446
1884.					20,945	432,971			81,887	77,898
1885.					22,038	455,564	1,765	24,050	123,753	118,110
1886.					20,009	413,631	1,710	25,020	116,346	116,346
1887.					21,137	436,939	1,971	20,400	124,818	120,429
1888.					24,673	510,029	712	7,128	165,025	142,850
1889.					22,978	474,990	850	8,536	181,285	154,972
1890.					21,841	451,503	1,980	19,800	161,934	153,955
1891.					18,865	389,965	2,462	27,610	197,019	170,021
1892.					18,436	381,095	2,112	21,000	152,754	144,111
1893.					18,334	389,338	2,128	16,000	168,300	147,044
1894.					21,919	453,119	1,400	14,000	156,809	133,929
1895.					23,876	493,568	1,450	14,500	136,590	111,251
1896.	644	9,960			27,195	562,165	1,407	17,500	155,572	121,754
1897.	15	150			26,054	538,590	1,422	12,550	132,086	106,610
1898.	1,017	16,660			29,876	617,604	1,378	10,300	126,754	102,055
1899.	1,000	15,000			28,955	598,553	1,411	12,600	138,712	108,828
1900.	336	1,950			26,459	546,963	358	3,200	170,100	136,947
1901.	850	15,300			30,348	627,357	1,074	8,118	206,087	181,425
1902.	1,052	16,470			25,533	527,806	1,337	9,562	189,427	173,881
1903.	835	16,700			21,409	442,799	1,020	7,332	218,580	153,600
1904.	320	6,400			13,707	283,353	1,023	10,200	272,252	298,248
1905.	300	3,600			12,223	252,676	1,023	9,680	333,312	345,414
1906.					13,675	282,686	551	4,480	357,411	380,559
1907.	30	225			10,192	210,711	473	4,803	234,455	230,433
1908.	30	195			7,928	163,891	312	3,204	345,682	364,379
1909.					7,751	160,854	358	3,382	353,999	406,457
1910.	22	134			4,385	90,638	374	3,760	376,082	481,493
1911.	20	122			2,174	44,935	350	4,900	404,801	479,515
1912.	38	230			2,904	60,031	350	5,270	303,155	368,931
1913.	620	12,138			6,636	137,180	285	5,300	298,864	339,857
1914.	650	13,000			4,562	94,305	273	5,800	238,212	278,160
1915.	317	12,119			2,210	45,685	375	9,875	215,472	301,261
1916.	620	12,139			1,176	24,310	256	8,000	49,365	115,976
1917.	500	12,500			850	17,571	283	9,000	163,852	250,174
1918.	565	11,300			690	14,263	211	8,440	260,661	373,752
1919.	290	5,600			418	8,641	183	6,990	206,831	511,883
1920.	341	11,268			1,128	21,598	102	3,692	332,404	580,148
1921.	219	5,781			680	13,556	256	7,906	341,705	747,934
1922.	130	3,250			1,047	21,643	338	12,525	441,752	915,845
1923.	33	838			1,626	33,612	439	16,723	551,230	1,070,408
1924.					1,678	34,687	311	15,136	678,107	1,187,918
1925.					3,151	65,137	11	220	829,438	1,512,015
1926.	266	6,650			1,290	26,667			1,013,257	1,850,243
1927.	208	4,160			2,687	55,545	6	110	948,895	1,152,160
1928.	254	5,080			1,272	26,295	6	110	827,063	982,287
1929.	398	7,960			460	9,920			707,817	878,487
1930.	1,484	29,679			964	22,634	12	433	341,508	398,861
1931.	1,438	28,760			3,525	121,613	21	868	315,948	363,528
1932.	1,747	34,940			329,942	6,966,931	50	1,762	378,287	488,044
1933.	1,320	52,800			9,376	19,959	50	2,006	454,703	523,216
1934.	666	26,660			11,960	418,959	70	2,242	729,019	808,294
1935.	779,307	73,855			19,918	696,931	37	4,415	926,796	978,288
1936.	180,609	23,620			26,560	934,248	131	7,006	870,856	908,383
1937.					29,943	1,082,170	152	5,616	1,298,618	1,340,830
1938.	1,269,179	128,086			855,432	18,432,378	53	2,378	1,278,204	1,302,347
1939.					7,310	19,170			1,395,172	1,517,297
1940.					6,541	12,989			394,216	512,762
1941.					2,465	4,129			255,736	368,639
1942.	82	175			5,840	224,840			401,284	489,932
1943.	5	740			3,291	126,704	10	600	634,960	790,273
1944.	24	1,505			4,321	158,797			1,538,738	1,812,815
1945.										
1946.										
Total.	2,229,095	225,561	21,712	497,073	1,100,345	25,523,600	40,296	509,538	26,959,746	33,393,329

* No production recorded, or data not available by provinces.

(a) 1874-1885 inclusive—exports.

NOTE.—In 1921 there were produced 16 tons of feldspar, valued at \$117. In 1940 there were produced 17 tons of fluorspar valued at \$365; in 1941 there were 300 tons at \$3,900 and in 1942, 300 tons at \$6,584.

Historical Summary of the Mineral Production of Nova Scotia—Continued

	Iron Ore		Lime		Manganese Ore and Bog Manganese		Quartz	
	tons	\$	bushels	\$	tons	\$	tons	\$
1876	15,274							
1877	16,879				97			
1878	36,600				127	5,505		
1879	29,889				145	7,170		
1880	51,193				223	7,931		
1881	39,843				231			
1882	42,135				205			
1883	52,410				150	12,462		
1884	54,885				302½			
1885	48,129				353½			
1886	44,388		16,000	3,800	427			
1887	43,532		49,400	11,442	306	21,280		
1888	42,611		29,450	6,480	106	6,480		
1889	54,161				67	3,947		
1890	49,206		217,944	44,565				
1891	53,649							
1892	78,258							
1893	102,201							
1894	89,379							
1895	83,792				108	6,348		
1896	58,810				123½	3,975		
1897	23,400				11	1,166		
1898	19,079				11	325		
1899	28,000				67	2,328		
1900	18,940							
1901	18,619							
1902	16,172							
1903	40,335							
1904	61,293							
1905	84,952							
1906	97,820	151,386	50,000	13,600				
1907	89,839	137,161	45,000	16,000				
1908	11,802	17,620	51,068	16,102				
1909			57,730	16,729				
1910	18,134	51,330	55,750	13,490				
1911	22	50	639,200	130,555	5½	300		
1912	30,857	168,877	709,596	145,121	75	1,875		
1913	20,436	21,049	854,812	171,339				
1914			517,722	103,748	28	1,120		
1915			915,086	183,017	51	5,760		
1916			911,534	182,506	646	70,371		
1917			986,106	197,344	158	14,836		
1918	130		748,314	149,663				
1919			366,543	73,309	45	3,600		
1920			201,500	40,300	62	4,140		
1921			25,914	6,085	68	3,400		
1922					73	2,044		
1923			42,370	7,199	200	1,400		
1924			2,229	936				
1925			8,243	3,464			1,352	6,760
1926			453,797	59,777			8,333	29,018
1927			873,200	100,254			4,834	16,721
1928			1,032,971	175,876			7,424	28,022
1929			1,200,029	154,187			11,845	31,388
1930			888,971	113,250	4	60	8,057	18,494
1931			526,571	79,418	60	2,400	3,116	6,836
1932			186,657	35,534				
1933			111,829	30,160			1,017	1,447
1934			254,857	67,954			7,292	12,107
1935			323,743	82,698			9,640	13,978
1936			447,543	119,230			6,764	10,819
1937			505,343	150,115			11,732	14,078
1938			352,886	110,648			4,701	8,415
1939			422,314	129,511	4	88	10,547	18,927
1940			628,971	184,094	152	4,315	8,755	15,670
1941			598,314	199,577			11,477	24,100
1942			624,286	226,334	61	91	10,708	23,557
1943			278,086	113,344			9,486	16,126
1944			96,057	42,957			10,100	27,350
1945			13,400	5,771			10,734	36,171
1946							7,525	15,550
Total							165,439	375,531

Nova Scotia had a production of lead in 1936 which amounted to 1,901,712 pounds valued at \$74,414 and in 1937 there were produced 418,086 pounds valued at \$21,364 and in 1939, 2,545,122 pounds valued at \$80,655.

In 1917 and 1918 there was a small production of molybdenite—some 274 pounds worth \$301.

Historical Summary of the Mineral Production of Nova Scotia—Continued

—	Salt		Sand and Gravel		Silica Brick		Silver	
	tons	\$	tons	\$	M	\$	fine oz.	\$
1914.....								
1915.....			368,049	71,821				
1916.....			175,571	84,631				
1917.....			225,457	129,620				
1918.....								
1919.....	174	2,188						
1920.....	3,023	32,000						
1921.....	2,638	23,269						
1922.....	5,053	54,666	154,021	54,974				
1923.....	4,480	39,151	203,416	55,928				
1924.....	4,551	37,469	306,873	60,849			44	29
1925.....	6,598	49,889	286,614	55,362			86	59
1926.....	8,165	68,781	230,307	52,952	1,358	64,461	112	70
1927.....	14,391	102,590	812,976	522,723	1,238	50,978	125	70
1928.....	19,604	118,342	296,266	111,103	1,627	69,179	77	45
1929.....	27,819	157,662	332,599	151,368	2,385	93,207	132	70
1930.....	23,058	136,226	525,683	310,407	2,040	78,259	67	26
1931.....	27,718	143,761	403,858	198,757	621	22,044	48	14
1932.....	31,897	150,708	423,487	136,677			47	15
1933.....	34,278	161,889	282,228	126,031	453	15,834	104	39
1934.....	42,886	191,917	256,572	114,597	2,159	71,215	321	152
1935.....	38,701	161,659	1,423,557	685,973	1,968	73,218	372	241
1936.....	38,774	183,915	1,947,471	†941,366	1,922	70,570	107,642	48,576
1937.....	47,865	216,401	2,992,429	1,457,266	2,926	121,146	26,990	12,113
1938.....	44,950	194,759	2,077,378	1,013,266	1,193	49,811	988	430
1939.....	47,885	213,029	2,139,427	1,225,827	1,890	75,212	173,877	70,399
1940.....	42,495	220,328	1,440,140	867,490	2,809	120,125	725	277
1941.....	54,007	307,637	749,441	332,531	2,828	119,511	673	257
1942.....	50,199	317,798	775,795	371,970	3,090	142,511	446	188
1943.....	47,775	245,157	917,376	585,007	3,113	169,783	144	65
1944.....	38,809	281,482	911,970	411,041	2,931	177,003	188	81
1945.....	37,825	254,138	1,308,848	555,809	3,040	185,865	112	53
1946.....	38,371	329,579	1,105,980	484,585	2,055	119,272	146	122
Total.....	783,989	4,396,390						

† Includes production in Prince Edward Island.

DOMINION BUREAU OF STATISTICS

Historical Summary of the Mineral Production of Nova Scotia—Concluded

	Stone								Zinc		Other products
	Granite		Limestone		Marble		Sandstone				
	tons	\$	tons	\$	tons	\$	tons	\$	pounds	\$	
1908.....					(a)	(a)					216,161
1909.....		5,832		161,922				21,850			71,715
1910.....		18,291		192,919				16,425			54,981
1911.....		24,258		245,216				23,440			68,735
1912.....		28,041		275,944				20,645			53,705
1913.....		29,302		258,719				62,490			101,196
1914.....		65,727		94,239				61,124			86,121
1915.....		79,636		255,024				33,264			
1916.....		164,870		263,803				30,625			82,527
1917.....		111,529		433,987				24,005			22,000
1918.....		(b)	(b)	(b)	(b)	(b)	(b)	(b)			119,229
1919.....		(b)	(b)	(b)	(b)	(b)	(b)	(b)			145,099
1920.....		(b)	(b)	(b)	(b)	(b)	(b)	(b)			226,121
1921.....	11,822	47,101	44,269	55,436			2,832	14,065			70,028
1922.....	12,725	44,489	68,122	56,936			7,108	18,067			10,028
1923.....	17,296	54,892	118,222	102,750			3,164	19,448			4,429
1924.....	7,554	33,021	57,069	56,323			2,912	22,480			
1925.....	14,961	54,524	84,939	73,717			2,225	6,445			
1926.....	4,884	41,738	82,753	97,255			4,678	11,799			
1927.....	611	36,770	68,294	75,292			3,546	8,745			
1928.....	39,360	102,295	72,350	79,320	160	2,975	9,298	29,185			
1929.....	76,742	98,357	175,981	199,384	132	2,515	11,851	75,966			
1930.....	7,856	38,107	79,941	88,545			64,666	193,664			
1931.....	24,895	72,009	21,684	69,415			36,602	84,208			
1932.....	3,635	18,461	9,974	27,990			21,052	40,856			
1933.....	8,145	36,675	21,514	43,911			11,790	16,043			
1934.....	325	12,300	105,620	135,962			17,123	23,055			
1935.....	525	23,800	8,988	19,188			202,952	578,844			
1936.....	66,507	99,855	20,860	36,365			167,205	239,109	6,180,219	204,874	
1937.....	16,430	50,966	24,398	35,914			137,893	192,218	5,485,550	268,902	
1938.....	5,765	31,768	20,957	34,696			36,940	80,480			
1939.....	885	20,809	17,239	33,941			31,711	79,167	9,152,856	280,901	
1940.....	87,975	155,458	24,160	46,717			69,316	111,469	4,755,502	162,210	
1941.....	410	30,537	46,973	69,501			66,219	169,307			
1942.....	429	41,985	185,232	645,680			43,856	76,502			
1943.....	703	28,407	174,933	264,197			72,232	128,265			
1944.....	1,886	37,532	50,734	123,613			45,813	63,968			
1945.....	379	25,695	60,387	158,644			62,668	130,840			
1946.....	8,394	49,176	84,805	215,257			90,534	251,020			
Total.....									25,574,127	916,887	

(a) Included with other products.

(b) Not shown by kinds 1918-1920. Total values for all kinds of stone for those years were: 1918, \$478,721; 1919, \$413,194 and 1920, \$420,175.

● In 1918 tungsten concentrates amounting to 1,063 pounds valued at \$372 were produced in Nova Scotia. In 1940, 8,586 pounds valued at \$5,226, in 1942, 4,300 pounds worth \$3,967 and in 1943, 19,374 pounds valued at \$18,564.

Historical Summary of the Mineral Production of New Brunswick

—	Clay Products		Coal (a)		Graphite		Grindstones (b)		Gypsum		Iron Ore	
	\$	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$	
1875.....								(c) 5,420	5,420			
1876.....								4,925	6,616			
1877.....								5,030	5,030			
1878.....								16,335	16,435			
1879.....								8,791	8,791			
1880.....								10,375	10,987			
1881.....								10,310	15,025			
1882.....								15,597	24,581			
1883.....								20,242	35,557			
1884.....								21,800	32,751			
1885.....								15,140	27,730			
1886.....	33,218			500	4,000	2,255	22,495	32,421	48,632			
1887.....	46,541	10,040	23,607	300	2,400	3,582	38,988	29,102	29,216			
1888.....	34,364	5,730	11,050	150	1,200	3,793	30,729	44,369	48,764			
1889.....	93,425	5,673	11,733	200	1,600	2,692	23,735	40,866	49,130			
1890.....	70,430	7,110	13,850	150	1,200	4,034	33,804	39,024	30,986			
1891.....	47,071	5,422	11,030	260	1,560	2,499	22,787	36,011	33,996			
1892.....	52,853	6,768	9,375			2,821	23,577	39,709	65,707			
1893.....		6,200	9,837			2,488	17,379	36,916	41,846			
1894.....		6,469	10,264			1,629	16,717	52,962	48,200			
1895.....		9,500	14,250	150	900	2,075	17,932	66,949	63,839			
1896.....		7,500	11,250	45	315	2,263	18,810	67,137	59,024			
1897.....		6,000	9,000	89	890	3,165	24,540	82,658	118,116			
1898.....		6,160	9,240	260	2,600	3,513	32,425	86,083	121,704			
1899.....	85,600	10,528	15,792			3,133	32,965	116,792	151,296			
1900.....	80,920	10,000	15,000	120	1,440	4,128	40,850	112,294	145,850			
1901.....	50,229	17,630	51,857	240	2,880	4,223	42,490	121,595	189,709			
1902.....	150,945	18,795	39,680	200	2,400	3,559	36,000	124,041	170,153			
1903.....	150,675	16,000	40,000			4,201	38,740	119,182	172,080			
1904.....	150,830	9,112	18,224	60	480	3,620	35,450	120,991	157,524			
1905.....	45,010	29,400	58,800	60	480	4,520	52,175	163,553	232,586			
1906.....	49,220	34,076	68,152			4,340	50,134	131,246	250,960			
1907.....	57,377	34,584	77,814			4,863	55,896	118,106	213,638			
1908.....	75,513	60,000	135,000	40	360	3,370	43,325	81,620	191,312			
1909.....	65,570	49,029	98,496			3,963	51,460	98,716	226,975			
1910.....	56,475	55,455	110,910			3,586	43,700	90,236	213,579	5,336	11,910	
1911.....	38,000	55,781	111,562			4,186	49,590	93,205	115,044	31,120	69,464	
1912.....	54,910	44,780	89,560			4,038	48,330	82,757	185,821	71,520	127,716	
1913.....	62,269	70,311	166,637			4,487	46,425	103,954	279,395	86,416	153,820	
1914.....	66,502	98,049	241,075			3,626	49,234	79,083	200,680	4,775	10,841	
1915.....	35,780	127,391	309,612			2,295	30,468	74,501	184,929	3,683	8,261	
1916.....	42,881	143,540	386,016			3,205	46,982	39,546	153,064			
1917.....	51,304	189,095	708,010			2,148	35,879	38,556	191,631			
1918.....	39,055	268,212	1,331,710			2,816	75,005	27,225	214,114			
1919.....	52,941	166,377	735,386			1,737	51,516	42,409	315,656			
1920.....	73,484	171,610	1,091,440			2,233	79,696	49,505	428,183			
1921.....	66,600	187,192	920,666			1,098	57,077	54,030	360,220			
1922.....	75,425	287,513	1,107,643			903	40,050	82,462	517,668			
1923.....	62,587	276,617	1,196,772			1,758	72,177	104,740	564,680			
1924.....	74,994	217,121	932,185			2,113	99,299	86,738	476,804			
1925.....	69,473	208,012	815,367			1,642	79,661	71,745	408,917			
1926.....	75,851	173,111	710,245			1,684	90,975	59,546	468,411			
1927.....	87,185	203,950	885,038			1,860	97,197	85,293	524,550			
1928.....	72,192	207,738	869,104			1,609	80,451	75,033	501,252			
1929.....	160,006	218,706	909,169			1,731	103,514	70,482	485,982			
1930.....	162,536	209,349	864,118			495	35,689	82,674	513,677			
1931.....	143,348	182,181	743,196			299	12,308	58,957	451,264			
1932.....	68,151	212,695	794,168			256	11,802	38,019	297,520			
1933.....	46,917	312,303	1,041,744			277	12,051	30,391	88,500			
1934.....	59,897	314,750	1,026,343			535	27,091	30,398	104,709			
1935.....	62,478	346,024	1,129,019			456	21,175	30,796	105,960			
1936.....	102,526	368,618	1,190,032			412	17,982	38,470	123,560			
1937.....	123,876	364,714	1,180,611			288	12,139	36,906	131,727			
1938.....	123,625	342,238	1,133,346			175	9,192	48,418	159,203			
1939.....	129,985	468,421	1,566,359			152	9,662	29,765	134,286			
1940.....	171,745	547,064	1,963,012			255	12,000	52,218	192,980			
1941.....	193,643	523,344	2,021,394			188	11,500	56,172	150,530			
1942.....	246,041	435,203	1,826,403			216	10,000	36,623	111,316			
1943.....	216,446	372,873	1,641,069			164	6,225	36,263	148,315	143,062	579,990	
1944.....	207,051	345,123	1,845,277			225	12,000	42,040	200,748			
1945.....	232,783	361,184	2,021,806			215	10,270	46,755	236,833			
1946.....	336,971	366,735	2,069,992			295	17,450	38,839	550,972			
Total.....		9,815,106	38,419,297	2,824	24,705	134,387	3,329,435	4,241,058	13,572,846	345,912	962,002	

(a) For the years 1919-1942 the tonnage shown is the total output from all mines. For previous years the figures given include only sales, colliery consumption and coal used by the operators.

(b) Includes pulpstones, etc.

(c) From 1875 to 1885, inclusive, the figures shown are exports.

Historical Summary of the Mineral Production of New Brunswick—Continued

—	Lime		Manganese Ore		Manganese Bog		Mineral Waters	Natural Gas		Petroleum	
	bushels	\$	tons	\$	tons	\$	\$	M cu. ft.	\$	barrels	\$
1886	316,380	58,120									
1887	478,410	103,463									
1888	440,225	82,993									
1889	1,005,685	162,157									
1890	814,662	136,586									
1891	67,430	15,285									
1892	(a)	(a)									
1893											
1894											
1895											
1896											
1897											
1898											
1899											
1900											
1901											
1902											
1903											
1904											
1905											
1906	405,450	94,290									
1907	554,330	124,786									
1908	155,748	34,202									
1909	697,466	154,151					14,894				
1910	470,060	105,593					14,003				
1911	613,728	132,897					16,000				
1912	616,835	133,742					19,843				
1913	392,985	98,841						173,903	36,549	1,485	1,826
1914	391,739	102,980						828,603	174,147	2,461	3,019
1915	369,117	93,797	150	3,600				425,826	54,249	2,111	3,762
1916	424,113	104,635	(b)	(b)				430,692	60,383	1,725	2,742
1917	532,251	171,248						610,118	79,628	1,345	2,663
1918	482,548	221,935						796,775	103,735	2,341	5,460
1919	468,533	223,193						792,396	107,842	3,009	7,402
1920	701,859	365,030						682,890	120,510	4,225	13,141
1921	562,447	203,084						682,502	130,506	5,148	19,963
1922	560,834	187,895						708,743	139,375	7,778	33,022
1923	329,548	143,814						753,898	148,040	7,778	32,732
1924	208,180	108,890	584	4,088				640,300	126,068	8,826	35,642
1925	202,106	92,216						599,972	113,577	5,561	21,313
1926	477,226	196,477						639,235	122,394	5,376	18,756
1927	343,111	148,321						648,316	128,300	10,544	29,940
1928	321,743	130,784						630,755	124,637	18,244	41,748
1929	443,371	174,553			385	2,237		660,981	324,344	8,043	21,391
1930	357,743	135,304	269	1,296	300	1,800		678,456	333,002	7,499	19,909
1931	321,171	127,054	57	493	275	1,650		661,975	325,751	6,758	17,378
1932	330,629	109,184			77	462		655,891	323,184	6,577	15,461
1933	481,400	134,786						662,452	326,191	6,408	14,332
1934	450,057	126,409						618,033	302,706	8,835	18,111
1935	464,914	124,775	100	800				623,601	306,005	11,106	22,277
1936	509,771	128,016	221	1,596				615,454	303,886	12,954	18,230
1937	568,542	150,362	85	817				606,246	298,819	17,112	24,075
1938	435,629	119,556						576,671	283,922	18,089	25,496
1939	533,571	151,898	392	3,600				577,492	284,689	19,276	27,246
1940	606,743	175,407						606,382	292,403	22,799	32,082
1941	621,486	180,133						616,041	300,543	22,167	31,220
1942	640,771	197,481	374	8,841				653,542	317,437	31,359	44,102
1943	495,200	174,368	48	985				619,360	299,688	28,089	39,467
1944	537,086	227,647						675,029	327,787	24,530	34,342
1945	572,600	241,651						702,464	341,636	23,296	32,832
1946	626,143	286,401						653,230	317,568	30,140	42,413
								541,010	262,441	28,584	40,018
Total								22,049,254	7,641,942	424,978	798,735

(a) No record 1892-1905.

(b) Included with other products.

Historical Summary of the Mineral Production of New Brunswick—Concluded

—	Sand and Gravel		Granite		Limestone		Sandstone		Peat Moss		Other products
	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$	\$
1908.....											(b) \$5,510
1909.....				11,541		30		30,609			4,200
1910.....				6,880		315		51,793			
1911.....				37,994		110		35,537			
1912.....				22,317				68,260			
1913.....				32,945				70,787			22,868
1914.....				24,525				236,647			25,095
1915.....	323,192	19,014		8,335				145,177			
1916.....	803,014	120,988		59,325		6,900		46,032			69,073
1917.....	518,401	47,062		61,170		22,875		27,105			
1918.....			(a)	(a)	(a)	(a)	(a)	(a)			39,217
1919.....			(a)	(a)	(a)	(a)	(a)	(a)			73,933
1920.....	(b)	(b)	(a)	(a)	(a)	(a)	(a)	(a)			59,472
1921.....	239,192	24,171	14,325	92,790			800	4,500			
1922.....	448,322	49,509	11,389	95,352			638	9,378			
1923.....	608,528	94,634	11,509	143,473	10,689	21,981	250	629			
1924.....	141,897	23,999	4,921	80,812	14,308	33,299					
1925.....	70,156	12,331	9,027	89,731	16,364	35,012					
1926.....	70,931	11,360	3,824	66,423	15,054	30,722	230	2,400			
1927.....	388,066	118,768	1,634	53,695	25,124	56,146	3,150	11,250			
1928.....	491,471	54,183	5,485	66,435	30,772	57,650	10,075	18,896			
1929.....	525,857	46,167	5,142	91,610	20,710	33,360	1,500	80,000			
1930.....	357,551	41,303	46,209	139,212	40,262	97,841	25,141	47,816			
1931.....	183,475	18,149	2,583	148,881	35,378	73,398	24,364	119,712			
1932.....	569,150	447,239	4,369	102,699	10,707	31,554	1,729	20,665			
1933.....	496,961	331,497	1,792	82,771	14,262	41,904	660	6,695			
1934.....	568,064	322,238	5,984	76,793	30,356	78,441	1,578	5,948			
1935.....	1,813,206	485,981	31,091	103,275	53,213	86,001	840	19,447			
1936.....	970,945	567,797	1,485	73,784	53,781	55,564	4,165	4,410			
1937.....	1,136,013	715,652	936	74,961	51,929	55,600	4,603	8,480			
1938.....	3,833,540	1,825,383	954	71,600	7,985	19,855	4,340	28,870			
1939.....	3,373,303	1,363,051	1,492	72,005	52,505	142,927	21,412	51,175			
1940.....	944,033	278,710	1,326	69,833	159,812	206,916	5,015	33,550			
1941.....	962,483	423,772	1,529	63,184	131,941	274,000	4,678	10,680			
1942.....	923,020	540,541	964	29,334	82,623	281,296	4,350	10,650	295	8,100	
1943.....	719,531	372,936	1,522	15,856	51,406	128,915	655	2,600	990	27,000	
1944.....	1,960,382	958,524	1,857	47,504	66,731	165,258	1,400	31,425	2,000	64,000	
1945.....	1,627,371	686,267	4,669	41,983	84,639	198,326	10,020	88,200	2,000	64,000	
1946.....	2,203,646	807,045	358	27,683	115,565	283,301	5,200	76,000	2,247	54,892	

(a) Not recorded by kinds.—Total stone production in 1918 was \$99,044, in 1919 it was \$125,294 and in 1920 it was \$280,167.

(b) Includes marble.

NOTE.—In addition to the above items 13,440 pounds of antimony valued at \$2,688 were produced in 1915. In 1917 there were 33,920 pounds of copper valued at \$9,219 and 400 ounces of silver valued at \$326 produced. Also in 1918 tungsten concentrates amounting to 22,000 pounds valued at \$8,693 were produced.

Historical Summary of the Mineral Production of Quebec

Year	Aluminum	Asbestos (b)		Cement		Chromite		Clay Products	Copper	
	pounds	tons	\$	barrels	\$	tons	\$	\$	pounds	\$
1877										
1878										
1879										
1880		380	24,700							
1881		540	35,100							
1882		810	52,650							
1883		955	68,750							
1884		1,141	75,097							
1885		2,440	142,441							
1886		3,458	206,251							
1887		4,619	226,976			60	945	83,025	3,340,000	367,400
1888		4,404	255,007			38	570	80,117	2,937,900	330,514
1889		6,113	426,554					223,161	5,562,864	927,107
1890		9,860	1,260,240					278,845	5,315,000	730,813
1891		9,279	999,878					458,597	4,710,606	741,920
1892		6,082	390,462					500,957	5,401,704	695,489
1893		6,331	310,156					489,470	4,883,480	564,042
1894		7,630	420,825						4,468,352	480,348
1895		8,756	368,175			1,000	20,000		2,176,430	208,067
1896		12,250	429,856			3,177	41,300		2,242,462	241,288
1897		30,442	445,368			2,342	27,004		2,407,200	261,903
1898		23,785	491,197			2,637	32,474		2,474,970	279,424
1899		25,536	485,849			2,021	24,252	820,758	2,100,235	252,658
1900		29,141	748,431			2,010	21,842	828,868	1,632,560	287,494
1901	283,737	40,217	1,259,759			2,335	27,000	866,060	2,220,000	359,419
1902	1,983,252	40,416	1,148,319			1,274	16,744	884,166	1,527,442	246,178
1903	1,750,599	41,677	929,757			3,509	51,129	1,028,246	1,152,000	152,467
1904	2,302,178	48,465	1,226,352			6,074	67,146	917,894	760,000	97,455
1905	2,590,329	68,263	1,503,259			8,575	93,301	896,000	1,621,243	252,752
1906	4,696,949	82,185	2,060,143			9,035	91,859	769,458	1,981,169	281,930
1907	5,921,299	90,426	2,505,402			7,196	72,901	1,214,108	1,517,990	303,659
1908	972,146	90,773	2,573,335	704,492	984,350	7,225	82,008	893,717	1,252,024	169,330
1909	6,083,695	87,300	2,301,775	1,011,194	1,314,550	2,470	26,604	1,153,832	1,088,212	141,272
1910	9,647,958	102,215	2,573,603	1,563,714	1,954,646	299	3,734	1,442,842	877,347	111,757
1911	9,679,980	127,414	2,943,108	1,614,730	1,963,439	157	2,587	1,341,467	2,436,190	301,503
1912	12,029,046	136,301	3,137,279	2,714,085	3,134,499			1,680,460	3,282,210	536,346
1913	14,065,028	161,086	3,849,925	2,940,211	3,430,023			1,606,816	3,455,887	527,679
1914	14,550,959	117,573	2,909,806	2,846,061	3,331,601	136	1,210	1,267,700	4,201,497	571,488
1915	18,368,524	136,842	3,574,985	2,390,724	2,812,797	12,341	179,543	918,425	4,197,482	725,115
1916	21,184,791	154,149	5,228,869	2,150,475	2,525,863	27,517	311,460	993,664	5,703,347	1,551,424
1917	22,088,067	153,771	7,228,233	2,079,625	3,274,989	36,725	499,682	983,310	5,015,560	1,363,229
1918	23,535,689	158,259	8,970,797	1,564,360	3,003,571	21,324	835,727	817,357	5,860,649	1,445,577
1919	21,582,264	159,236	10,975,369	2,260,422	4,340,010	8,541	228,898	1,577,576	2,691,695	503,105
1920	22,384,702	199,573	14,792,201	3,013,463	6,545,054	11,016	251,379	2,376,029	880,638	153,724
1921	6,335,083	92,761	4,906,230	2,135,631	5,410,275	2,798	55,696	1,744,760	3,522,308	44,045
1922	12,867,305	163,706	5,552,723	2,660,935	5,907,300	767	11,503	2,494,236		
1923	24,245,766	231,476	7,519,906	3,173,993	6,347,986	3,558	52,650	2,399,598		
1924	27,243,004	225,572	6,618,930	2,758,316	4,796,959			2,435,695	1,893,008	246,546
1925	31,105,293	290,387	8,987,459	3,365,802	5,689,991			2,426,887	2,510,141	352,474
1926	38,910,914	279,389	10,095,458	3,727,377	4,535,386			2,702,298	2,674,058	368,886
1927	82,735,938	274,778	10,621,013	4,636,751	5,383,058			2,734,738	3,119,848	403,084
1928	82,797,804	273,033	11,238,360	4,913,820	6,305,396			3,097,295	33,697,949	4,909,791
1929	63,439,528	306,055	13,172,581	5,169,408	7,120,374			3,187,702	55,337,169	10,019,901
1930	76,217,209	242,114	8,390,163	4,865,609	7,031,528			2,464,044	80,310,363	10,425,891
1931	68,103,008	164,296	4,812,886	4,942,323	7,092,895			2,360,908	68,376,985	5,723,154
1932	39,555,847	122,977	3,039,721	2,210,584	3,155,702	78	1,113	1,064,551	67,336,692	4,296,216
1933	35,532,104	158,307	5,211,177	1,517,555	2,128,906	30	343	580,088	69,943,882	5,214,177
1934	34,865,362	155,980	4,936,326	1,613,641	2,294,847	71	1,098	632,322	73,968,545	5,487,948
1935	46,342,747	210,467	7,054,614	1,751,012	2,472,008	346	5,371	593,162	79,050,906	6,162,350
1936	59,280,250	301,287	9,958,183	2,093,130	2,945,074	545	8,508	691,765	66,340,175	6,287,058
1937	93,812,965	410,025	14,505,541	2,578,623	3,537,798	210	3,256	1,053,153	94,653,132	12,378,737
1938	142,407,743	289,793	12,890,195	2,730,320	3,693,188			1,022,194	112,645,797	11,233,039
1939	165,680,869	364,454	15,858,492	3,027,759	4,035,294			1,274,776	117,238,897	11,831,749
1940	218,288,565	346,805	15,619,865	3,854,339	5,432,105	335	5,780	1,546,246	134,166,955	13,532,079
1941	427,746,534	477,846	21,468,840	4,048,749	5,798,188	2,372	42,679	1,944,358	143,783,978	14,502,052
1942	631,192,051	439,459	22,663,283	4,440,416	6,487,078	11,456	343,568	1,741,297	140,911,876	14,212,372
1943	991,406,296	467,196	23,660,505	3,394,895	4,899,578	29,595	919,878	1,504,428	131,163,776	15,411,744
1944	924,130,162	419,265	20,619,510	3,249,302	4,736,004	27,054	748,494	1,881,791	108,055,176	12,966,620
1945	431,425,042	466,894	22,802,511	3,872,373	5,985,077	5,755	160,752	2,534,630	102,888,069	12,888,976
1946	388,234,533	558,181	25,240,283	5,046,166	7,910,548	3,110	61,123	3,457,168	69,797,697	8,934,105
Total		10,122,656	406,509,670			268,014	5,446,141		1,863,069,797	204,285,515

Year	Arsenic		Year	Arsenic	
	pounds	\$		pounds	\$
1941....	2,056,000	89,024	1945....	1,821,263	118,557
1942....	6,349,074	428,562	1946....	420,654	21,580
1943....	2,744,921	221,085			
1944....	2,268,067	153,944	Total	15,659,979	1,032,752

Data for cement production are not available prior to 1908. Cement was produced in Quebec as early as 1840, (b) 1880 to 1886—exports.

Historical Summary of the Mineral Production of Quebec—Continued

—	Feldspar		Gold		Graphite		Iron Ore†		Iron Oxides Ochre	
	tons	\$	fine oz.	\$	tons	\$	tons	\$	tons	\$
1876										
1877			588	12,057						
1878			868	17,937						
1879			1,160	23,972						
1880			1,605	33,174						
1881			2,741	56,661						
1882			827	17,093						
1883			866	17,787						
1884			422	8,720						
1885			103	2,120						
1886			193	3,981						
1887			78	1,604					350	2,350
1888			181	3,740			13,404	455	3,733	
1889			58	1,207	42	1,560	10,710	397	7,900	
1890	700	3,500	65	1,350	25	4,000	14,533	794	15,280	
1891	685	3,425	87	1,800			22,305	275	5,125	
1892	175	525	628	12,987	107	3,763	14,380	900	17,750	
1893	575	4,525	759	15,696			22,680	390	5,800	
1894			1,412	29,196	5	400	22,076	1,070	17,710	
1895			62	1,281	70	5,250	19,492	611	8,690	
1896	972	2,583	145	3,000	94	9,140	17,783	1,339	14,600	
1897	1,400	3,290	44	900	247	12,350	17,630	2,362	16,045	
1898	2,500	6,250	295	6,089	100	5,098	22,436	3,905	23,560	
1899	3,000	6,000	238	4,916	90	8,000	17,873	2,226	17,450	
1900	155	542			302	5,600	19,420	3,919	20,000	
1901	534	1,068	145	3,000	220	4,400	19,000	1,966	15,398	
1902			391	8,073	100	10,000	15,459	2,233	16,735	
1903	18	32	180	3,712			18,524	4,955	30,495	
1904			140	2,900	25	2,300	12,035	6,266	32,760	
1905			191	3,940			16,152	3,925	24,995	
1906			165	3,412			12,681	5,105	34,675	
1907					125	8,300	9,933	32,938	* 6,758	* 36,125
1908					120	5,000	12,748	34,956	* 5,828	* 35,570
1909					1	165	10,103	22,094	4,746	30,440
1910	97	1,719	193	3,990	134	10,176	4,150	5,508	3,940	28,096
1911	90	1,800	124	2,565	155	16,000	4,503	8,252	4,813	33,185
1912	17	255	613	12,672	374	33,084	3,616	6,479	3,612	28,173
1913	100	2,000	642	13,270	604	50,680	1,185	4,232	7,654	32,410
1914	74	1,554	701	14,491	103	9,620	5,102	26,999	5,987	41,774
1915	98	2,156	1,292	26,708	261	18,886			5,890	51,725
1916	572	2,005	1,099	22,720	75	5,431			6,248	48,353
1917	4,610	18,075	1,034	21,375	479	75,776	3,209	8,308	8,811	58,711
1918	1,188	8,204	1,511	31,235	541	106,305	17,189	54,815	9,409	87,605
1919	191	4,279	1,939	40,083	180	40,018	8,159	44,531	17,317	112,440
1920	925	13,073	1,470	30,388	20	400	321	1,005	11,862	113,427
1921	649	10,052	955	19,742	233	31,913	960	3,000	19,128	157,909
1922	9,737	80,180	635	13,127	38	2,423			8,879	92,765
1923	12,472	127,826			24	1,500	526	1,410	7,282	110,488
1924	12,026	102,779	667	13,788	45	2,316	69	186	9,911	123,186
1925	16,147	142,118	883	18,253	46	3,275	1,408	3,771	7,146	88,540
1926	11,287	94,730	1,602	33,116	359	30,900	3,978	11,934	6,985	89,173
1927	13,168	111,136	3,680	76,072	326	29,516	200	600	6,518	100,923
1928	12,730	104,618	8,331	172,217	34	2,043	2,029	8,980	5,931	102,186
1929	12,943	104,789	60,006	1,240,434	50	4,668	2,244	6,732	5,278	109,383
1930	15,790	133,492	90,798	1,876,961	173	12,652	2,748	7,359	6,220	113,932
1931	17,074	163,802	141,747	2,930,170	197	9,850	412	1,239	6,590	83,753
1932	10,381	86,842	300,075	6,471,075			1,509	10,261	5,410	48,205
1933	3,390	39,062	401,105	9,417,572					5,017	44,161
1934	6,183	59,283	382,886	10,950,539	43	2,222			4,192	51,965
1935	9,207	78,853	390,097	13,458,347	129	6,426	2,023	14,161	4,798	64,566
1936	7,002	63,075	470,552	16,558,725	21	1,281	2,288	16,400	5,357	75,388
1937	8,115	75,703	666,905	23,361,683			2,566	18,318	5,458	65,630
1938	12,285	105,612	711,480	24,894,685			4,229	26,432	5,617	77,640
1939	5,874	62,878	881,263	30,998,426			207	1,449	5,387	67,209
1940	5,399	60,923	953,377	34,455,998			3,694	21,267	5,465	82,501
1941	8,548	89,004	1,019,175	39,238,238			5,535	24,510	9,603	107,926
1942	14,218	137,160	1,089,339	41,939,552			12,651	49,110	8,770	139,185
1943	16,802	164,588	1,092,388	42,056,938			10,218	51,841	8,866	147,049
1944	17,199	176,222	922,533	35,517,521			69,437	308,290	7,998	131,057
1945	17,842	177,271	746,784	28,751,184			33,973	165,195	8,117	142,050
1946	26,389	247,242	661,608	25,471,908			14,147	67,575	9,917	170,068
	29,758	330,981	618,339	22,723,958			1,406	7,735	12,268	146,401
Total....	351,291	3,217,081	11,642,454	413,182,031	6,377	592,687			348,456	3,802,324

NOTE.—2 tons of garnets valued at \$150 were produced in 1927. * Includes a small production from Ontario.

† From 1911 shipments consisted almost entirely of titanium ores; in 1942 included 187 tons of straight iron ore valued at \$935.

Historical Summary of the Mineral Production of Quebec—Continued

	Kaolin		Lead		Lime		Magnesitic Dolomite		Mica		Mineral Waters (Natural)	
	tons	\$	pounds	\$	bushels	\$	tons	\$	tons	\$	imp.gal.	\$
1886.					401,700	75,700				6,991		
1887.					424,316	79,137				8,276		
1888.					356,646	61,489			(a)	(a)		
1889.					187,220	36,831				1,496		
1890.			105,000	4,704	116,593	23,274				9,590		
1891.			88,665	3,857	506,700	77,462				37,000		
1892.					*	*				23,000		
1893.			3,931	146								
1894.												
1895.												
1896.												
1897.			177,084	6,340						26,000		
1898.			221,760	8,382						106,375		
1899.										133,000		
1900.			11,200	490						106,000		
1901.			318,052	13,784						120,000		
1902.			420,000	17,090					66	34,304		
1903.										74,119		
1904.										76,487		
1905.										109,672		
1906.					923,563	201,816			283	159,334		
1907.					1,053,856	262,990			318	224,197		
1908.					857,700	201,357	120	840	148	82,613		75,533
1909.					1,281,827	315,633	330	2,503	128	93,298		68,565
1910.					1,227,555	299,126	323	2,160	316	87,295		68,194
1911.					1,428,392	356,453	991	5,531	217	69,465		63,637
1912.	20	160			1,727,614	474,595	1,714	9,645	196	81,044	92,873	36,736
1913.	500	5,000			1,616,446	418,008	515	3,335	626	125,488		30,805
1914.	1,000	10,000			1,767,935	389,064	358	2,240	246	62,794		16,566
1915.	1,300	13,000	40,401	2,262	1,351,306	274,831	14,779	126,584	217	50,390		18,086
1916.	1,750	17,500	698,760	59,485	1,498,845	267,119	54,778	554,304	844	192,343	93,782	16,223
1917.	533	9,594	1,378,001	153,468	1,470,486	335,012	58,090	728,275	774	286,730		9,201
1918.	863	19,299	2,110,059	195,180	1,527,784	418,888	39,365	1,016,765	481	229,119		7,609
1919.	759	13,744	2,280,000	158,825	1,796,822	493,762	11,273	328,465	2,429	218,437		13,257
1920.	683	15,022	905,472	80,949	2,108,203	826,044	18,378	512,756	737	281,460	24,219	10,109
1921.	124	1,888	595,881	34,215	2,040,451	790,503	2,927	74,109	484	41,172	19,626	7,278
1922.	1,197	17,866			2,259,313	689,799	2,849	76,294	1,360	97,748	12,161	3,692
1923.	163	2,369	520,041	37,334	2,357,928	634,213	4,801	134,382	1,545	216,684	5,421	2,408
1924.			1,058,983	85,820	2,386,445	699,937	3,873	101,356	1,677	185,020	7,683	2,288
1925.			2,051,100	187,060	2,542,237	673,330	5,576	122,325	2,415	187,800	7,122	2,961
1926.			3,729,636	251,788	2,849,635	766,116	4,571	137,431	1,664	170,118	6,956	2,444
1927.			6,496,577	341,461	3,075,819	806,665	7,337	230,309	1,454	99,194	10,330	1,813
1928.			6,218,336	284,520	3,260,857	896,782	13,195	346,990	1,101	54,224	15,415	5,608
1929.			5,358,304	270,616	4,768,343	1,264,194	18,809	491,170	1,062	72,630	12,205	2,488
1930.					3,695,714	967,650	13,336	336,162	430	61,729	12,941	3,727
1931.					3,185,600	804,218	11,411	295,579	290	30,601	19,868	4,746
1932.					2,680,371	587,901		262,860	41	4,076	15,506	4,697
1933.					3,152,400	647,558		360,128	256	39,060	9,024	3,094
1934.					3,105,429	631,984		382,927	322	85,967	75,665	16,116
1935.			2,047,624	64,156	3,327,800	678,866		486,084	373	74,894	126,616	15,113
1936.			2,047,689	80,126	3,807,257	718,585		768,742	272	63,123	131,186	17,399
1937.			1,521,182	77,732	4,466,086	909,116		677,207	546	124,594	198,319	19,697
1938.					3,923,257	843,331		420,261	218	72,982	159,893	19,033
1939.					4,603,200	983,072		474,418	434	122,243	104,629	17,503
1940.					6,669,114	1,480,466		897,016	436	202,583	109,025	18,466
1941.	(b)	2	30		8,757,571	2,062,744		831,041	802	284,563	144,441	58,062
1942.	408	6,130	437,634	14,713	9,959,314	2,323,707		1,059,374	1,329	285,263	129,062	60,316
1943.	93	1,531	2,435,523	91,430	10,920,914	2,667,391		1,260,056	1,543	245,846	125,605	61,703
1944.	424	5,758	10,487,842	471,953	9,788,056	2,504,078		1,139,281	1,137	178,899	148,065	78,226
1945.	446	3,771	9,229,726	461,486	8,887,343	2,195,837		1,278,596	1,428	121,011	236,476	125,523
1946.	821	5,775	7,359,708	496,780	8,471,228	2,304,826		1,225,593	1,199	108,667	211,842	121,526
Total	11,086	148,437	70,354,171	3,956,152				17,163,094				1,110,448

* Data are not available by provinces from 1892-1905.

(a) No record.

Note: One bushel of lime equals 70 pounds.

(b) Kaolin included in clay products 1941 to 1946.

Historical Summary of the Mineral Production of Quebec—Continued

Year	Molybdenite		Peat		Phosphate (b)		Pyrites (Sulphur content (c))		Quartz		Sand and Gravel	
	pounds	\$	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$
1878..					9,919	195,831						
1879..					6,604	101,470						
1880..					11,673	175,664						
1881..					9,497	182,339						
1882..					16,585	302,019	2,300					
1883..					19,666	427,168						
1884..					20,946	415,350	42,906					
1885..					28,535	490,331						
1886..					19,435	283,603	34,600					
1887..					19,589	264,452	36,000					
1888..					20,396	219,779						
1889..					27,552	287,400						
1890..					27,172	309,980			200	1,000		
1891..					20,244	206,416						
1892..					10,231	134,964						
1893..					7,650	60,076			100	500		
1894..					6,861	41,166						
1895..					1,822	9,565						
1896..					570	3,420			10	50		
1897..					908	3,984						
1898..					632	3,160			284	570		
1899..					1,279	7,674			600	1,290		
1900..					1,270	6,090						
1901..					1,033	6,280						
1902..					1,856	4,953						
1903..					1,329	8,214						
1904..					817	4,500						
1905..					1,300	8,425						
1906..					600	4,500						
1907..					408	3,410						
1908..					598	5,900	26,598	159,588				
1909..					525	4,800	35,300	130,009				
1910..			70	280	1,456	12,386	24,242	102,162	805	1,006		
1911..			200	800	586	4,909	39,122	247,555	548	684		
1912..			500	2,000	164	1,640	60,849	243,396	556	1,240		243,126
1913..			2,000	8,000	385	3,643	87,814	349,265	1,008	2,000		638,778
1914..					554	4,875	117,698	470,792	847	847		370,713
1915..					200	2,400	142,735	570,940	778	778		260,983
1916..					190	2,340	130,639	523,272	1,149	1,436	934,746	212,884
1917..	216,693	216,693			123	1,230	122,882	501,351	550	1,788	998,600	265,282
1918..	333,318	383,315			140	1,200	124,871	507,802	1,730	5,383	(a)	
1919..	83,002	69,203	486	4,811	22	300	52,746	203,222	2,221	7,773	(a)	
1920..							14,817	44,451	1,986	5,558		431,826
1921..					30	450	1,986	10,463	5,994	29,824	700,669	110,752
1922..					131	1,320			10,994	53,023	905,101	156,940
1923..					30	600			13,376	68,936	1,055,817	206,175
1924..	18,739	9,370					4,032	10,619	17,893	87,267	2,197,145	414,428
1925..	22,350	11,176			16	189	12,250	36,750	6,459	30,064	2,203,196	533,850
1926..	20,943	10,472			40	800	14,100	42,117	24,550	107,779	5,233,696	1,490,674
1927..					31	399	13,021	42,795	49,141	132,615	8,615,738	1,880,931
1928..					91	1,126	1,552	12,061	64,577	143,067	8,136,341	1,701,282
1929..	16,150	6,400	1,607	8,839	40	800	9,926	73,119	46,444	132,532	6,203,231	1,534,699
1930..			2,219	9,330	40	760	12,653	93,038	49,561	119,668	6,581,807	1,750,690
1931..			1,170	5,937			14,586	108,617	26,987	69,759	7,657,964	1,952,959
1932..			762	2,286	1,316	12,333	17,954	133,838	20,123	71,645	3,458,128	893,896
1933..			681	2,549	105	805	19,167	146,261	28,294	109,533	3,356,232	942,429
1934..					81	683	4,908	50,398	57,208	229,817	3,672,582	980,454
1935..					116	1,043	7,370	47,779	51,948	226,839	5,268,987	1,442,468
1936..			45	255	525	4,927	43,084	282,743	78,975	320,634	5,490,280	1,418,231
1937..					100	900	28,534	194,496	127,535	448,327	9,476,000	2,637,495
1938..					208	1,886	16,580	98,261	85,153	315,251	12,523,404	3,532,873
1939..	2,240	600			157	1,712	61,476	275,951	104,827	369,172	10,050,985	2,703,032
1940..	22,251	10,280			358	4,039	61,728	212,012	109,090	321,891	11,681,390	2,673,300
1941..	196,600	88,470	*7,265	173,639	2,487	33,376	146,826	575,422	147,318	288,948	11,681,390	2,673,300
1942..	222,276	131,906	*12,982	197,560	930	12,973	168,532	675,965	203,219	543,817	11,026,249	2,485,853
1943..	784,715	549,515	14,920	302,747	1,050	14,272	136,007	545,229	214,959	605,916	10,601,376	2,362,635
1944..	2,124,693	1,078,616	19,477	363,321	482	6,716	116,887	453,501	236,091	639,429	8,541,400	2,104,856
1945..	978,117	411,663	18,517	387,499	291	4,236	105,613	445,534	195,857	626,079	8,971,960	1,279,537
1946..	736,400	295,640	62,382	501,073	57	869	92,716	375,328	214,076	612,128	12,374,125	3,313,103
Total	5,778,487	3,273,319			309,034	4,330,110			2,204,021	6,835,833		

(a) Included with other products.

(b) 1878-1885 exports and include a quantity of Ontario phosphate cleared through Montreal.

(c) 1871-1899 tons of pyrites shipped; data 1890-1907 not recorded by provinces, 1908-1927 tonnage of pyrites shipped 1928-1946 sulphur content of pyrites shipped.

* Moss only. In 1943, 522 tons peat fuel valued at \$4,440 and in 1944, 444 tons worth \$3,597.

Historical Summary of the Mineral Production of Quebec—Continued

Year	Selenium		Silver		Granite (b)		Limestone (b)		Marble (b)		Sandstone (b)		Slate†	
	pounds	\$	fine oz.	\$	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$
1933	22 131	16,600	471,419	178,851	131,837	408,207	1,120,248	940,019	7,983	42,283	73,425	58,231		
1934	48,764	73,146	470,254	223,187	391,428	806,685	1,034,958	953,815	9,302	47,503	86,364	85,822	306	458
1935	206,421	396,328	668,836	433,838	137,912	429,283	1,143,983	1,087,320	10,518	43,455	104,920	122,301	819	1,229
1936	168,417	298,098	724,339	326,872	137,912	429,283	1,265,243	1,058,547	17,866	138,294	102,228	102,388	803	895
1937	208,531	360,759	908,590	407,784	218,743	611,125	1,653,556	1,474,053	14,957	61,348	70,726	65,424	414	471
1938	217,952	378,147	1,189,495	517,157	294,446	757,531	1,850,019	1,672,260	8,838	46,580	42,587	51,010	494	547
1939	23,841	42,175	1,167,444	472,675	503,011	1,276,859	1,904,058	1,726,053	7,990	198,612	112,403	150,792	683	683
1940	43,510	83,104	1,340,450	512,709	366,662	792,708	2,287,384	1,854,423	8,767	50,632	92,378	129,179	639	639
1941	203,162	388,039	1,657,082	634,016	316,372	866,182	2,570,875	2,567,422	10,809	42,916	76,928	82,701	346	346
1942	326,208	620,319	1,655,042	697,865	1,178,705	1,449,840	2,926,964	2,565,029	9,429	58,714	72,894	92,724	158	158
1943	216,498	378,872	2,212,115	1,001,071	634,920	1,164,463	2,709,320	2,696,205	7,596	41,720	75,268	94,388	191	191
1944	146,352	263,434	2,500,681	1,075,293	127,544	830,238	2,370,141	2,696,205	7,596	41,720	75,268	94,388	191	191
1945	160,720	308,583	2,149,570	1,010,298	77,145	887,113	2,372,758	2,877,684	7,410	65,566	211,902	224,352	946	1,567
1946	110,798	201,598	1,916,453	1,603,113	109,443	1,408,618	2,982,747	3,683,271	13,134	138,594	380,318	398,858	617	954
Total	2,103,275	3,815,202	26,618,342	13,714,993										

(b) Data not available prior to 1908.

(c) Data not available by kinds.

Total values for all grades were:—1918, \$952,402; 1919, 1,441,919, and 1920, 2,189,425.

†1903 to 1919

inclusive recorded in squares.

Historical Summary of the Mineral Production of Quebec—Concluded

	Talc and Soapstone		Tellurium		Zinc (a)		Other products
	tons	\$	pounds	\$	pounds	\$	\$
1886	50	400					
1887	100	800					
1888	140	280					
1889	195	1,170					
1890	917	1,239					
1891							
1892	1,374	6,240					
1893	717	1,320					
1894	916	1,640					
1895	475	2,138					
1896	410	1,230					
1897	157	350					
1898	405	1,000			788,000	36,011	
1899	450	1,960					
1900					22,400	983	
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							959,920
1910							
1911							
1912							
1913					670,000	6,700	24,063
1914					1,938,000	10,017	5,180
1915					600,000	16,500	6,390
1916					1,663,200	212,956	129,275
1917					1,786,740	159,038	351
1918					2,802,928	228,691	182,902
1919					1,752,000	128,562	248,707
1920	150	1,050			1,120,200	85,931	
1921							
1922	150	4,950					
1923	590	19,993			366,240	24,197	
1924	449	20,273			2,909,008	184,547	
1925	704	30,130			9,936,000	757,322	
1926	885	38,209			12,904,176	956,199	
1927	1,276	51,504			17,189,046	1,064,690	
1928		40,171			21,057,760	1,156,745	
1929		47,986			19,653,440	1,058,731	
1930		50,168			9,754,160	351,150	
1931		34,439					
1932		46,751					
1933		47,680					
1934		44,207					
1935		32,053	1,708	3,416	5,322,844	164,955	
1936		32,770	19,502	34,519	6,896,123	228,606	
1937		40,513	26,439	45,739	8,566,927	419,951	
1938		35,038	41,577	71,512	5,315,852	163,356	
1939		41,471	2,940	4,769	28,758,759	882,606	
1940		74,905			27,696,721	944,735	
1941		155,925			46,389,581	1,582,349	*
1942	14,369	136,529			73,940,811	2,522,121	(b)
1943	14,204	135,469			128,169,810	5,126,792	(c)
1944	19,013	204,127			137,378,439	5,907,273	(d)
1945	14,225	153,694			111,909,565	7,206,976	
1946	14,914	150,004			89,650,129	7,001,675	(e)
Total		1,690,466	92,166	159,955		38,590,365	

(a) 1898-1900, pounds of zinc contained in ore or concentrates shipped from the mines; 1913-1915, pounds of ore shipped from the mines; 1916-1946, pounds of zinc recovered by Canadian smelters and estimated recoveries by foreign smelters.

* 101 tons of barite valued at \$808 and 939 pounds of tungsten concentrates worth \$627.

(b) Includes 141,081 pounds of magnesium (produced in Ontario from Quebec brucite) valued at \$62,076 and 2,981 pounds tungsten concentrates worth \$2,612.

(c) Includes 5,401 pounds of tungsten concentrates valued at \$5,369.

(d) Includes 18 tons of fluorspar valued at \$670.

(e) Includes 6,484 pounds of bismuth valued at \$9,078.

Historical Summary of the Mineral Production of Ontario

	Actinolite		Arsenic		Asbestos		Barite		Bismuth		Cement (d)	
	tons	\$	pounds	\$	tons	\$	tons	\$	pounds	\$	barrels	\$
1885.			880,000	17,600								
1886.			240,000	5,460								
1887.			60,000	1,200								
1888.			60,000	1,200								
1889.												
1890.			50,000	1,500								
1891.			40,000	1,000								
1892.												
1893.												
1894.			14,000	420								
1895.												
1896.												
1897.	205	1,845										
1898.												
1899.			114,000	4,872								
1900.			606,000	22,725								
1901.	521	3,126	1,390,000	41,676								
1902.	550	4,400	1,600,000	48,000								
1903.	550	3,108	514,000	15,420								
1904.												
1905.												
1906.			402,000	14,058								
1907.			630,000	36,209								
1908.			1,431,000	41,060							1,519,930	1,910,630
1909.			2,258,000	64,100							2,462,027	3,084,218
1910.	30	330	3,004,000	75,328							2,504,650	3,150,479
1911.	67	736	4,194,000	76,237							3,090,786	3,741,039
1912.	92	1,000	4,090,000	89,262							3,044,713	3,372,897
1913.	66	720	3,384,000	101,463							3,992,988	4,311,183
1914.	119	1,304	3,474,000	104,015							2,775,142	3,062,129
1915.	220	2,420	4,792,000	147,830							2,407,670	2,597,807
1916.	250	2,750	4,372,000	262,349							2,230,386	2,312,677
1917.	120	1,320	5,312,000	658,231	10	2,150					1,676,904	2,267,610
1918.	228	2,508	4,964,000	520,525			60	1,020			1,220,003	1,976,515
1919.	80	880	5,718,000	488,706							2,023,280	3,050,585
1920.	100	1,160	3,662,000	425,617							2,035,594	4,377,814
1921.	78	975	2,382,000	233,763							2,723,071	6,424,356
1922.	50	575	4,116,000	299,940							3,104,386	6,393,566
1923.	53	583	5,158,617	552,785	6	2,600	200	4,180			3,296,428	5,855,589
1924.	90	1,225	3,745,225	313,281	172	91,900			12,803	27,913	3,564,499	5,668,671
1925.	40	500	2,156,441	113,324	2	901			19,667	18,566	3,462,358	5,253,911
1926.	80	1,000	4,055,477	135,549	14	3,935			6,440	6,440	3,398,860	4,792,857
1927.	86	1,075	4,961,178	197,668					2,072	1,003	3,751,786	5,144,326
1928.	70	875	4,097,225	178,149					14,002	5,067	3,911,705	5,520,897
1929.	30	375	3,742,913	154,887					27,446	23,413	4,624,712	6,608,246
1930.	34	437	2,750,887	109,932					12,732	6,366	3,042,690	5,779,404
1931.	35	456	3,575,936	135,170					7,331	3,532	3,470,056	5,006,826
1932.			2,424,342	98,714					16,798	7,289	1,599,342	2,288,975
1933.			1,468,022	56,534			20	60	7,580	3,731	1,095,845	1,587,812
1934.	30	365	1,647,513	56,412					7,552	3,444	1,702,128	2,403,590
1935.			2,558,789	75,326					7,079	6,796	1,243,836	1,752,148
1936.			1,365,006	42,491					3,552	3,516	1,542,463	2,180,895
1937.			1,589,426	41,032	1	250			5,711	5,654	2,650,652	3,657,067
1938.			2,175,646	50,538					9,516	9,754	1,818,032	2,555,214
1939.			1,741,917	52,257	18	720	323	3,630			1,709,263	2,437,777
1940.			2,093,275	62,798			305	4,577	17,780	24,620	2,355,352	3,518,247
1941.			1,482,000	64,171					7,490	10,379	2,748,854	4,019,656
1942.			1,504,049	152,331					2,333	3,219	2,784,782	3,998,294
1943.			408,617	32,924							1,972,009	2,872,732
1944.			358,955	26,922							1,863,210	2,730,381
1945.			224,467	12,352	3	2,646					2,460,996	3,805,131
1946.			325,231	16,684		279					3,677,695	6,025,503
Total	3,874	36,048	119,794,755	6,567,997	226	165,381	908	13,476	187,962	170,702	101,459,173	148,097,554

In 1925 Ontario produced 1,751 pounds of antimony valued at \$206 and in 1926 some 1,596 pounds worth \$281 were produced.

In 1929 4,456 pounds of beryl crystals, \$114.

(d) Data not available prior to 1908; cement was produced in Ontario as early as 1867.

Historical Summary of the Mineral Production of Ontario—Continued

—	Chromite		Clay Products	Cobalt		Copper		Corundum		Diatomite	
	tons	\$	\$	pounds	\$	pounds	\$	tons	\$	tons	\$
1886			881,039			165,000	18,150				
1887			1,187,453			322,524	36,284				
1888			1,123,671								
1889			1,182,397			1,466,752	201,678				
1890			1,347,278			1,303,065	205,233				
1891			1,076,154			4,127,697	531,234				
1892			1,313,877			2,203,795	254,538				
1893						3,641,504	391,461				
1894						5,207,679	497,854				
1895						4,576,337	492,414				
1896						3,167,256	344,598				
1897						5,500,652	621,023				
1898			1,449,536			8,375,223	1,007,539				
1899			1,828,936			5,723,324	1,007,877				
1900			2,009,915			6,740,058	1,091,215	3	300		
1901			2,222,620			8,695,831	1,401,507	387	46,415		
1902			2,149,451			7,408,202	864,278	768	84,465		
1903			2,402,520			7,172,533	949,285	703	77,510		
1904			2,306,200	32,000	19,960	4,913,594	630,070	993	109,545		
1905			2,696,500	236,000	100,000	8,779,259	1,368,686	1,644	149,153		
1906			3,136,870	642,000	80,704	10,638,231	2,050,838	2,274	204,973		
1907			3,123,872	1,478,000	104,426	14,104,337	2,821,432	1,892	177,922		
1908			2,476,152	2,448,000	111,118	15,005,171	1,981,883	1,089	100,398		
1909			3,425,841	3,066,000	94,965	15,746,699	2,044,237	1,491	162,492		
1910			3,667,810	2,196,000	64,699	19,259,016	2,453,213	1,870	198,680		
1911			3,916,575	1,704,000	170,890	17,932,263	2,219,297	1,472	161,873		
1912			4,564,700	1,808,000	314,351	22,250,601	3,635,971	1,960	239,091		
1913			5,230,467	1,642,000	420,356	25,885,929	3,952,522	1,177	137,036		
1914			5,979,607	889,027	571,710	28,948,211	3,937,536	548	72,176		
1915			2,254,863	504,212	536,268	39,361,464	6,799,693	262	33,138		
1916			2,145,036	840,536	924,590	44,997,035	12,240,094	67	10,307		
1917			2,575,304	1,079,572	1,727,135	42,867,774	11,651,461	188	32,153		
1918			2,434,215	1,347,544	3,368,860	47,074,475	11,593,502	137	26,112		
1919			4,574,796	530,371	1,325,928	24,346,622	4,550,627				
1920			5,613,488	546,023	1,365,058	32,059,993	5,596,392	196	24,547		
1921			5,183,125	251,986	755,958	12,821,385	1,602,930	403	55,965		
1922			6,944,218	569,960	1,852,370	10,943,636	1,464,477				
1923			6,270,615	888,061	2,530,974	31,656,800	4,565,227				
1924			5,089,299	948,704	1,682,395	37,113,193	4,833,622				
1925			5,195,084	1,116,492	2,328,517	39,718,777	5,577,311				
1926			5,356,469	664,778	1,136,014	41,312,867	4,828,964				
1927			5,853,035	880,590	1,764,534	45,341,295	4,946,533				
1928			6,177,664	954,860	1,671,900	66,607,510	8,770,149				
1929			6,830,162	929,415	1,801,915	88,879,853	14,622,572				
1930			5,221,214	694,163	1,144,007	127,718,871	15,187,259				140
1931			3,552,800	521,051	651,179	112,882,625	9,096,463				840
1932			1,639,508	490,631	587,957	77,055,413	4,407,928				309
1933			1,024,579	466,702	597,752	145,504,720	10,118,847				1,298
1934	40	480	1,261,006	594,671	592,497	205,059,539	14,822,704				1,920
1935		9,576	1,370,225	681,419	512,705	252,027,928	19,295,965				4,600
1936		5,070	1,573,936	887,591	804,676	287,914,078	26,898,920				2,000
1937		39,964	2,033,845	507,064	848,145	322,039,208	41,716,364				1,868
1938			2,083,496	459,226	790,913	309,030,106	30,405,500				
1939			2,346,638	732,561	1,213,454	328,429,665	32,637,305				
1940			2,508,540	794,359	1,235,220	347,931,013	34,742,229				
1941			3,087,616	263,257	255,904	333,829,767	33,192,644				
1942			2,549,486	83,871	88,444	308,282,414	30,625,404				
1943			2,453,829	175,961	191,407	277,840,560	32,232,027				
1944			2,347,396	36,283	34,106	285,307,278	33,845,632				
1945			3,107,189	109,123	90,026	239,450,875	29,771,633	1,317	130,393		
1946			4,288,780	73,900	70,215	179,424,639	22,502,528	742	102,340		
Total		55,090		35,825,964	36,524,442	5,004,092,122	562,154,759	21,756	2,351,095	338	13,255

* Exclusive of cobalt in ore placed on government stock pile at Deloro, Ontario.

Historical Summary of the Mineral Production of Ontario—Continued

	Feldspar		Fluorspar		Gold		Graphite		Gypsum†	
	tons	\$	tons	\$	fine oz.	\$	tons	\$	tons	\$
1876									120	180
1877									489	675
1878									579	720
1879									875	1,240
1880									657	1,040
1881									1,249	1,946
1882									462	837
1883									688	1,254
1884									525	787
1885									5,826	12,000
1886									8,560	11,715
1887					327	6,760			6,700	10,200
1888									7,382	13,128
1889									6,200	8,075
1890									5,660	18,300
1891					97	2,000			4,320	5,399
1892					344	7,118			2,898	10,193
1893					708	14,637			2,369	6,187
1894					1,917	39,624			2,420	4,840
1895					3,015	62,320			3,305	7,786
1896					5,563	115,000	650	13,000	1,461	4,661
1897					9,157	189,294	100	3,000	1,087	4,201
1898					12,863	265,889	300	6,000	1,020	3,978
1899					20,394	421,591	1,220	16,179	1,095	5,692
1900	163	570			14,391	297,495	1,500	24,000	1,917	7,699
1901	4,816	9,632			11,844	244,837	1,750	31,500	2,720	21,988
1902	7,576	15,152			11,118	229,828	795	15,900	2,390	18,350
1903	13,910	18,934			9,096	188,036	728	23,745	1,853	23,834
1904	11,083	22,166			1,935	40,000	367	8,980	2,965	24,420
1905	11,700	23,400	12	84	4,402	91,000	481	16,255	10,404	52,417
1906	16,948	40,890			3,202	66,193	459	11,000	10,380	42,456
1907	12,584	29,819			3,212	66,398	210	5,040	11,731	48,278
1908	7,877	21,099			3,212	66,398	730	37,624	15,055	67,229
1909	12,686	38,664	2	15	1,569	32,425	1,237	58,087	27,399	98,018
1910	15,719	45,867	34	238	3,089	63,849	895	36,492	53,119	176,056
1911	17,706	51,684	40	240	2,062	42,625	1,356	88,317	62,315	208,029
1912	13,633	28,916			86,523	1,788,596	2,059	80,662	81,219	204,033
1913	16,716	59,241			219,801	4,543,690	2,560	118,792	81,172	190,422
1914	17,962	68,668			268,264	5,545,509	3,476	249,586	36,668	116,086
1915	13,987	55,796			406,577	8,404,083	3,173	296,587	48,947	130,138
1916	14,878	53,332	1,284	10,238	492,481	10,180,485	2,934	208,852	38,214	151,564
1917	18,274	81,622	4,249	68,756	423,261	8,749,581	899	63,439	84,790	433,053
1918	18,591	108,449	7,187	150,779	411,976	8,516,299	1,068	65,557	99,958	542,317
1919	13,754	73,158	3,425	59,281	505,739	11,679,483	1,288	72,842	88,121	467,097
1920	37,224	270,843	3,758	68,475	564,995	12,045,553	1,957	133,704	74,707	404,162
1921	20,115	150,457	116	1,744	708,213	14,640,062	2,210	127,863	82,020	491,833
1922	15,255	120,576	284	3,905	1,000,340	20,678,862	2,401	165,344	89,987	496,059
1923	17,199	134,822	64	597	971,704	20,086,904	1,047	52,373	83,998	500,688
1924	28,657	216,422	76	1,343	1,241,728	25,668,795	1,288	72,842	85,811	553,271
1925	17,394	141,059	12	200	1,461,039	30,202,357	1,795	109,613	100,347	832,689
1926	22,783	199,102			1,497,215	30,950,180	1,338	86,542	94,946	776,069
1927	17,119	154,533			1,627,050	33,634,108	1,362	16,145	35,358	374,169
1928	18,954	180,153			1,578,434	32,629,126	1,761	78,500	33,234	141,389
1929	21,737	206,979	70	1,120	1,622,267	33,535,234	1,882	88,812	53,780	233,895
1930	9,722	104,667	80	1,240	1,736,012	35,886,532	1,389	64,998	57,503	242,470
1931	7,962	100,119	40	620	2,085,814	44,980,280	1,389	64,998	59,440	260,792
1932	3,657	42,920	32	464	2,280,105	53,534,743	1,389	64,998	59,440	260,792
1933	4,387	45,350	73	1,064	2,155,519	61,647,843	1,389	64,998	59,440	260,792
1934	7,302	61,665	150	2,100	2,105,339	72,634,195	1,389	64,998	59,440	260,792
1935	8,650	75,008	75	900	2,220,336	78,133,624	1,389	64,998	59,440	260,792
1936	8,409	70,840	75	900	2,378,503	83,318,960	1,389	64,998	59,440	260,792
1937	9,061	72,610	150	2,550	2,587,095	90,522,454	1,389	64,998	59,440	260,792
1938	8,106	65,964	217	3,906	2,896,477	101,883,578	1,389	64,998	59,440	260,792
1939	7,061	51,056	240	4,995	3,086,076	111,538,873	1,389	64,998	59,440	260,792
1940	12,907	98,619	4,437	58,952	3,261,688	125,574,988	1,389	64,998	59,440	260,792
1941	11,822	107,124	5,234	93,867	3,194,308	122,980,858	1,389	64,998	59,440	260,792
1942	5,468	49,353	4,340	113,957	2,763,819	106,407,032	1,389	64,998	59,440	260,792
1943	6,659	61,549	10,355	301,424	2,117,215	81,512,777	1,903	197,431	92,448	335,637
1944	5,667	50,361	6,906	217,031	1,731,836	66,675,686	1,582	171,166	90,288	348,873
1945	3,857	35,414	7,369	233,708	1,625,368	62,576,668	1,910	179,001	92,174	385,516
1946	5,485	53,696	8,042	237,491	1,813,333	66,639,988	1,975	180,405	122,524	492,179
Total	603,188	3,768,315	68,458	1,642,184	55,249,967	1,680,890,913	4,124,086	2,651,698	12,472,853	

† 1876 to 1885, inclusive, exports.

Garnets: 1923—1,245 tons, value \$100,000.

1924—360 tons, value \$7,200

Grinding pebbles: 1920—560 tons, value not available.

1925—105 tons, value \$945

1926—64 tons, value \$576

Garnet schist: 1941—16 tons, value \$160

1942—17 tons, value \$176

1944—3 tons, value \$90

1946—2 tons, value \$1,200

DOMINION BUREAU OF STATISTICS

Historical Summary of the Mineral Production of Ontario—Continued

—	Iron Ore		Lead		Lime		Mica		Mineral Waters (Natural)		Magnesium	
	tons	\$	pounds	\$	bushels	\$	tons	\$	imp.gals	\$	pounds	\$
1886	16,032				783,450	140,290		22,017				
1887	16,598				1,239,451	178,153		21,540				
1888	16,894				1,296,343	169,194	15	30,207				
1889					1,622,892	136,814		27,222				
1890	5,000	*			1,234,975	185,602		58,484				
1891					1,227,681	152,286		44,510				
1892								81,745				
1893												
1894												
1895												
1896	15,270				1,880,000	222,000		*				
1897	2,770				*	*						
1898	21,111				2,620,000	308,000		50,000				
1899	25,126				4,342,500	535,000		12,000				
1900	82,950				3,983,000	544,000		29,475				
1901	272,538				4,100,000	550,000		60,000				
1902	359,288				4,300,000	617,000	993	40,000				
1903	209,634		50,000	2,119	3,400,000	520,000		101,600				
1904	141,601		885,000	38,135	2,600,000	406,800		103,738				
1905	193,464		284,212	13,378	3,100,000	424,700		84,290				
1906	141,078	337,918	2,200,000	124,454	2,885,000	496,785	291	68,563				
1907	207,769	488,324			2,333,879	393,474	456	144,579				
1908	216,177	528,475			2,087,731	358,507	288	88,402				
1909	263,893	553,808			2,619,553	434,147	241	57,258		61,526		
1910	231,445	513,722			2,988,020	476,137	442	54,484		92,610		
1911	175,586	446,326			3,360,265	538,902	373	103,090		111,369		
1912	112,321	222,490			3,376,193	573,269	384	59,212		136,778		
1913	195,680	427,975	33,000	1,537	3,254,482	573,209	478	62,932		131,529		
1914	240,079	531,200			3,393,078	556,850	349	68,816		138,072		
1915	304,429	766,166	58,985	4,983	1,903,914	328,515	449	46,267		115,215		
1916	271,967	706,799	685,932	58,393	2,031,396	367,115	200	41,515		95,788		
1917	198,113	703,301	1,580,711	176,712	2,846,850	668,368	364	62,896		110,333		
1918	201,119	833,722	1,684,366	155,804	2,660,791	762,976	392	72,121		135,231		
1919	195,649	686,381	1,487,586	103,625	3,578,834	1,143,973	266	42,431		145,400		
1920	126,900	507,600	2,255,520	201,643	3,530,547	1,344,188	325	55,351		55,958		
1921	58,499	227,134	3,312,493	190,203	5,109,635	1,962,086	1,466	94,562		14,473		
1922	16,190	52,055	2,890,397	180,216	4,980,183	1,767,543	218	28,891	308,647	14,438		
1923	30,447	113,543	4,401,494	315,983	6,002,621	1,893,663	1,989	54,515	209,072	10,528		
1924	44	*	5,055,368	409,687	5,419,307	1,840,152	1,980	110,290	227,030	14,047		
1925			7,209,534	657,510	6,304,831	2,044,125	2,414	172,252	201,670	13,133		
1926			7,398,795	580,730	6,522,747	2,051,446	1,605	82,663	183,012	25,452		
1927			7,990,709	528,729	6,946,630	2,198,239	881	59,086	208,400	27,277		
1928			6,814,757	402,289	7,919,600	2,467,843	1,284	75,183	293,200	12,811		
1929			4,760,506	294,431	10,575,943	3,364,411	2,559	32,944	253,630	27,890		
1930			2,193,856	116,034	7,201,886	2,177,587	2,991	45,919	309,700	13,651		
1931			985,633	41,647	4,218,857	1,222,270	740	34,275	214,200	20,754		
1932			86,477	1,828	4,762,943	1,273,230	1,049	23,465	197,540	8,578		
1933			29,910	692	4,176,943	1,227,197	268	2,752	61,208	2,473		
1934			21,558	525	5,548,314	1,536,289	666	9,371	29,794	2,347		
1935			22,532	706	6,289,714	1,696,867	618	9,059	21,775	1,622		
1936			17,442	683	7,045,514	1,946,060	255	7,144	19,900	1,477		
1937			29,849	1,525	8,413,343	2,152,644	529	11,433	23,100	1,117		
1938			22,363	748	7,727,943	1,989,259	399	9,137	26,700	889		
1939	123,598	341,594	39,130	1,240	8,635,971	2,236,952	252	6,445	28,416	2,586		
1940	414,603	1,211,305	345,455	11,614	10,646,686	2,752,787	564	22,978	19,140	1,602		
1941	516,037	1,426,057	1,622,823	54,559	12,317,857	3,246,648	458	31,962	31,638	2,426		
1942	545,119	1,516,142	3,183,159	107,018	11,877,085	3,125,574	794	47,047	36,623	14,489		
1943	498,232	1,452,250	2,273,896	85,362	11,769,171	3,115,194	1,400	89,243	28,023	14,189	473,910	208,520
1944	553,252	1,909,608	1,065,741	47,958	12,265,285	3,311,177	2,127	296,189	14,006	5,748	7,153,974	2,074,652
1945	1,135,444	3,635,095	668,762	33,438	10,389,014	2,131,676	1,743	646,745	7,185	805	10,579,878	2,575,695
1946	1,549,523	6,822,947	699,244	47,199	11,776,314	3,316,231	1,452	95,123	8,285	976	7,358,545	1,607,284
							2,354	66,952	6,000	878	320,677	75,538
Total			74,392,195	1,993,337				3,960,370		1,586,445	25,886,984	6,541,689

10 tons iron oxides at \$160 in 1911.

Historical Summary of the Mineral Production of Ontario--Continued

[illegible]

Historical Summary of the Mineral Production of Ontario—Continued

Molybdenite	Natural Gas		Nepheline Syenite	Nickel		Peat		Petroleum		Phosphate (a)		
	pounds	\$		M cu. ft.	\$	\$	tons	\$	barrels	\$	tons	\$
1917.....	68,213	68,213	19,888,085	3,641,587	84,330,280	33,722,112			202,991	473,477	26	256
1918.....	42,931	49,371	13,029,524	2,834,460	92,507,293	37,002,917			288,692	777,737		
1919.....			11,024,041	2,690,400	44,544,883	17,817,953	500	1,750	219,804	625,342	2	31
1920.....			10,529,374	2,030,131	61,335,706	24,534,282	4,550	18,650	180,071	526,386		
1921.....			8,422,774	3,080,130	19,239,060	6,752,571	1,666	6,664	172,859	559,198		
1922.....			8,060,114	4,076,296	17,397,123	6,158,993	3,000	14,500	164,731	526,316	59	476
1923.....			8,128,413	4,056,244	62,453,843	18,332,077			159,400	478,149		
1924.....			7,150,078	3,798,381	69,536,350	19,470,178			154,368	441,952		
1925.....			7,143,962	3,938,006	73,567,114	15,946,672	1,370	8,394	143,134	386,555		
1926.....			7,764,996	4,409,593	65,714,294	14,374,163			137,850	379,221		
1927.....			7,311,215	4,331,780	66,798,717	15,262,171			139,606	288,347	82	824
1928.....			7,632,800	4,535,312	96,755,578	22,318,907	1,497	5,845	134,094	249,737		
1929.....			8,586,475	4,959,695	110,275,912	27,115,461	1,000	4,500	121,104	253,678		
1930.....			7,965,761	5,034,828	103,768,867	24,455,133	628	1,602	117,302	235,746		
1931.....	1,222	280	7,419,534	4,635,407	65,666,320	15,267,453	504	1,066	122,365	219,993		
1932.....			7,386,154	4,719,267	30,327,968	7,179,862	2,486	5,307	130,343	247,468		
1933.....			7,166,659	4,523,085	83,264,658	20,130,480	450	900	136,058	253,486		
1934.....			7,682,851	4,741,368	128,687,340	32,139,425	1,878	7,343	141,385	299,874		
1935.....			8,158,825	4,938,084	138,516,240	35,345,103	1,340	5,761	165,041	346,156	70	60
1936.....			10,066,743	6,052,294	169,739,393	43,876,525	1,296	7,121	165,495	350,767		
1937.....	16,000	8,147	10,746,334	6,588,798	224,790,974	59,469,423	478	2,676	165,205	356,000		
1938.....	14,000	4,500	10,952,806	6,460,764	210,572,738	53,914,494	620	3,500	172,641	359,268		
1939.....	482	216	11,966,581	7,261,928	226,105,865	50,920,305	445	2,445	206,379	401,430		
1940.....			13,053,403	7,745,834	245,657,871	59,822,591	30	75	187,644	397,078		
1941.....			11,828,703	7,140,130	282,258,235	68,656,795	(b)		160,238	337,760		
1942.....	423	150	10,476,770	6,800,901	285,211,803	69,998,427	(c)	44,863	143,845	306,242	334	4,458
1943.....			7,914,408	5,943,913	292,010,288	71,075,322	9,599	148,993	139,155	311,356	401	4,113
1944.....			7,082,508	4,694,097	274,598,629	69,204,152	12,690	146,620	125,067	296,420		
1945.....	2,815	1,082	7,199,970	4,837,586	275,766	61,982,133	11,755	225,162	113,325	268,478	8	120
1946.....			7,051,309	4,656,528	192,124,537	45,385,155	17,320	229,801	123,082	291,719		
Total			169,179,360	2,919,980	4,619,161,340	1,241,121,429			24,990,320		35,864	396,216

(a) No record of production 1872-1877.

(b) Includes 4,315 tons of moss valued at \$42,708.

Peat fuel in 1945 was 118 tons valued at \$1,062 and in 1946, 145 tons worth \$1,305.

(c) Includes 9,427 tons of moss valued at \$147,729.

Exports.

Historical Summary of the Mineral Production of Ontario—Continued

	Platinum		Palladium		Other Platinum Metals		Quartz (a)		Salt	
	fine oz.	\$	fine oz.	\$	fine oz.†	\$	tons	\$	tons	\$
1890.....							200	1,000		
1891.....										
1892.....										
1893.....							100	500		
1894.....										
1895.....										
1896.....							10	50		
1897.....										
1898.....							284	570	57,142	248,639
1899.....							600	1,260	59,339	254,390
1900.....									62,055	279,458
1901.....									59,428	262,328
1902.....			4,411	86,014					64,456	292,581
1903.....			3,177	61,952					62,452	297,517
1904.....			952	18,564					69,477	321,778
1905.....			1,562	28,116					67,340	320,858
1906.....			314	5,652			48,376	65,765	76,720	329,130
1907.....							56,585	124,148	72,697	342,315
1908.....							44,741	52,830	79,975	378,798
1909.....							56,924	71,285	84,037	415,219
1910.....							87,400	90,945	84,092	409,624
1911.....							59,978	83,181	91,582	443,004
1912.....							99,686	193,976	95,053	459,582
1913.....							77,253	167,842	100,791	491,280
1914.....							52,947	83,628	107,038	495,648
1915.....							95,771	143,257	119,900	600,226
1916.....							94,519	167,636	132,903	717,653
1917.....							177,983	362,251	138,909	1,047,792
1918.....							216,539	474,772	131,727	1,285,039
1919.....	25	1,447	62	3,534			60,055	179,549	148,112	1,395,291
1920.....	578	36,961	913	58,392	513	31,815	90,433	321,063	206,832	1,512,724
1921.....	269	20,184	591	38,267	57	9,690	72,068	220,806	161,987	1,649,626
1922.....	458	44,709	724	47,060	391	31,280	81,528	118,054	176,741	1,573,657
1923.....	1,210	141,010	1,732	138,560	304	45,000	225,110	483,285	197,917	1,674,365
1924.....	9,181	1,090,858	8,923	811,993	593	51,120	111,645	192,855	203,428	1,337,311
1925.....	8,692	1,027,477			8,288	648,969	188,560	324,526	226,315	1,352,504
1926.....	9,471	919,349			10,024	640,178	192,733	339,304	252,345	1,388,672
1927.....	11,217	716,653			11,545	554,190	159,150	266,204	254,181	1,510,777
1928.....	10,452	704,360			13,087	605,563	194,503	308,008	279,841	1,377,629
1929.....	12,474	843,928			17,141	802,453	187,973	316,050	302,445	1,420,424
1930.....	34,000	1,542,172			34,040	894,511	167,487	274,674	248,637	1,558,405
1931.....	44,725	1,595,117			46,918	1,217,717	97,888	148,642	231,329	1,760,388
1932.....	27,284	1,097,021			37,613	90,890	66,135	93,574	231,138	1,789,751
1933.....	24,746	850,190			31,009	645,043	66,562	86,146	244,107	1,755,087
1934.....	116,177	4,488,712			83,932	1,699,282	89,838	134,572	276,751	1,784,196
1935.....	105,335	3,444,455			84,772	1,962,937	83,034	120,005	320,003	1,698,508
1936.....	131,551	5,319,922			103,671	2,453,075	884,585	216,037	350,044	1,557,078
1937.....	139,355	6,751,750			119,829	3,179,782	1,142,372	653,073	407,701	1,539,599
1938.....	161,310	5,196,279			130,893	3,677,342	1,173,259	597,037	368,130	1,637,140
1939.....	148,877	5,221,712			135,402	4,199,622	1,333,542	665,148	370,843	2,200,189
1940.....	108,464	4,239,424			91,522	3,520,746	1,581,367	810,285	412,401	2,371,780
1941.....	124,257	4,747,860			97,432	3,396,304	1,745,244	899,687	477,170	2,512,166
1942.....	285,188	10,897,033			222,573	8,279,221	1,367,733	914,256	558,407	2,793,328
1943.....	219,706	8,458,681			126,004	5,233,068	1,350,640	852,196	594,889	3,356,870
1944.....	157,523	6,064,635			42,929	1,960,085	1,326,288	868,389	603,806	2,906,117
1945.....	208,234	8,017,010			458,674	18,671,074	1,165,238	820,664	578,697	2,920,973
1946.....	121,771	7,672,791			117,566	5,162,801	1,052,644	852,713	441,679	2,408,279
Total.....							17,427,310	14,142,298	16,962,989	62,383,693

† Other platinum metals include palladium from 1925 to 1946.

(a) From 1936 includes low grade silica fluxing sand.

Historical Summary of the Mineral Production of Ontario—Continued

—	Sand and Gravel		Selenium		Silica Brick		Silver	
	tons	\$	pounds	\$	M	\$	fine oz.	\$
1887							190,495	186,304
1888							208,064	195,580
1889							181,609	169,986
1890							158,715	166,066
1891							225,633	222,926
1892							41,581	36,425
1893								8,689
1894								
1895								
1896							5,000	2,990
1897							85,000	49,521
1898							202,000	120,352
1899							161,650	99,140
1900							151,400	89,250
1901							145,000	75,632
1902							17,777	9,502
1903							200,875	118,376
1904							2,451,356	1,479,442
1905							5,401,756	3,607,894
1906							9,982,363	6,521,178
1907							19,398,545	10,254,847
1908							24,822,099	12,784,126
1909							30,366,366	16,241,755
1910							30,540,754	16,279,443
1911							29,214,025	17,772,352
1912							28,411,261	16,987,377
1913							25,139,214	13,779,055
1914							22,748,609	11,302,419
1915	3,033,383	727,426					21,608,158	14,188,133
1916	3,711,231	818,947					19,301,835	15,714,975
1917	4,283,076	1,170,052					17,198,737	16,043,562
1918	(c)	(c)					12,117,878	13,465,628
1919	(c)	(c)					9,907,626	9,996,795
1920		1,931,924					9,761,607	6,116,037
1921	6,273,173	1,496,729					10,811,903	7,300,305
1922	6,285,123	2,184,174					10,540,943	6,838,226
1923	8,146,433	2,006,958					11,272,567	7,527,933
1924	6,174,284	2,041,959					10,529,131	7,271,944
1925	5,201,604	1,779,129						
1926	6,483,163	2,292,678			1,307	66,241	9,274,965	5,760,402
1927	7,512,763	2,405,729			553	28,549	9,307,953	5,246,893
1928	10,389,408	2,230,307			1,597	86,323	7,242,601	4,213,456
1929	11,358,568	3,462,379			1,566	80,374	8,890,726	4,711,462
1930	12,027,082	3,783,830			378	19,120	10,205,683	3,893,876
1931	7,465,017	2,562,477	16,899	32,108	279	13,702	7,438,951	2,222,014
1932	6,994,447	1,971,239			93	4,304	6,335,788	2,006,648
1933	5,967,994	2,517,230	26,090	53,745	183	7,351	4,535,680	1,715,975
1934	7,880,959	1,821,689	51,574	91,286	369	14,730	5,321,160	2,525,470
1935	8,770,117	2,211,406	75,363	144,697	493	22,976	5,161,651	3,344,229
1936	8,498,153	2,227,620	106,300	188,151	471	26,715	5,219,366	2,355,343
1937	8,832,526	3,613,854	116,696	201,884	818	59,980	4,693,047	2,106,286
1938	8,531,281	3,046,043	54,577	94,691	595	50,592	4,318,837	1,877,701
1939	9,350,875	3,537,216	126,930	224,539	603	49,595	4,689,422	1,898,653
1940	9,678,745	4,025,026	136,350	260,429	629	62,661	5,563,101	2,127,831
1941	11,569,382	4,524,463	142,498	272,171	1,283	118,922	4,977,476	1,904,432
1942	8,420,358	3,433,986	76,000	145,920	1,183	120,495	4,452,787	1,877,562
1943	8,285,309	3,620,852	82,000	143,500	1,052	125,722	2,671,320	1,208,879
1944	9,529,803	4,417,427	65,000	117,000	1,066	135,089	3,143,275	1,351,608
1945	10,466,891	4,466,862	168,000	322,560	1,168	131,398	3,185,369	1,497,123
1946	14,881,918	6,738,595	270,606	492,503	847	78,532	2,485,215	2,078,882
Total			1,514,883	2,785,184	16,533	1,363,371	482,621,915	289,548,890

(c) Included with Other Products, data not available by provinces.

Historical Summary of the Mineral Production of Ontario—Continued

	STONE									
	Granite		Limestone		Marble		Sandstone		Slate	
	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$
1909.....		42,700		639,674		3,441		62,824		
1910.....		109,678		722,763		4,100		62,247		
1911.....		131,816		680,461		25,996		54,032		
1912.....		174,946		862,052		12,926		59,240		
1913.....		324,062		1,196,130		18,238		54,738		
1914.....		309,720		853,906		30,300		59,923		
1915.....		140,894		634,728		10,927		19,588		
1916.....		135,826		688,114				33,083		
1917.....		119,301		808,658				64,516		
1918.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)		
1919.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)		
1920.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)		
1921.....	165,418	233,353	2,547,625	3,927,836			3,037	6,393		
1922.....	185,738	412,995	2,128,769	2,547,561			2,758	9,370		
1923.....	188,998	293,454	2,436,453	2,542,320			5,473	23,378		
1924.....	214,691	208,219	2,614,911	2,551,111			10,571	30,038		
1925.....	263,567	242,150	2,750,115	2,530,621			9,030	44,562		
1926.....	398,253	359,217	3,214,544	2,742,424	586	13,755	8,659	41,892		
1927.....	390,679	294,098	3,854,421	3,716,419			9,860	50,192		
1928.....	605,275	566,601	3,967,098	3,421,064			9,556	53,903		
1929.....	850,927	926,977	4,380,706	3,759,357			8,039	49,929		
1930.....	856,124	876,110	4,524,661	3,876,527	7,345	51,085	8,103	46,806		
1931.....	133,905	232,557	3,215,697	2,594,328	4,323	29,173	5,439	25,386		
1932.....	73,272	186,357	1,825,793	1,419,049	2,065	40,175	4,008	9,435		
1933.....	19,650	39,433	1,222,752	910,419	2,614	21,033	8,890	12,333		
1934.....	75,526	128,386	2,370,339	1,788,107	4,331	20,556	10,104	28,458	120	600
1935.....	44,473	93,465	2,061,206	1,680,810	4,726	35,210	12,536	54,407		
1936.....	492,227	582,603	2,205,992	1,773,764	4,765	29,204	3,436	10,805	260	2,080
1937.....	625,160	769,860	3,582,175	2,841,469	6,685	27,247	8,680	22,934	300	2,258
1938.....	254,917	351,941	2,242,964	1,911,841	10,537	40,694	4,662	16,220	211	2,469
1939.....	495,619	625,880	1,931,285	1,624,618	6,519	30,642	4,124	16,322	47	649
1940.....	529,440	704,421	3,302,596	2,649,809	4,792	22,157	3,446	11,008		
1941.....	152,426	388,325	3,353,856	2,832,056	6,540	30,365	13,420	27,190		
1942.....	90,530	288,828	2,992,885	2,636,431	4,295	27,675	18,835	33,004		
1943.....	79,582	212,136	3,114,460	2,704,205	4,167	24,852	7,818	17,190		
1944.....	125,604	307,497	2,852,241	2,549,402	5,215	32,650	5,223	20,431		
1945.....	109,286	279,105	2,833,573	2,582,663	5,818	45,081	3,680	19,845		
1946.....	122,562	406,403	3,747,948	3,415,261	8,402	58,333	11,365	43,975		

(a) 1918-1920, total values of all kinds of stone—1918, \$1,079,745; 1919, \$1,936,268; 1920, \$4,035,478.

Historical Summary of the Mineral Production of Ontario—Concluded

	Sulphur (b)		Talc (a)		Tellurium		Tungsten Concentrates		Zinc (e)		Other products
	tons	\$	tons	\$	pounds	\$	pounds	\$	pounds	\$	\$
1886.....			50	400							
1887.....			100	800							
1888.....			140	280							
1889.....			195	1,170							
1890.....			917	1,239							
1891.....											
1892.....			1,374	6,240							
1893.....			717	1,920							
1894.....			916	1,640							
1895.....			475	2,133							
1896.....			410	1,230							
1897.....			157	350							
1898.....			405	1,000							
1899.....			450	1,960							
1900.....			1,420	6,365					814,000	46,805	
1901.....			259	842					190,400	8,359	
1902.....			689	1,804							
1903.....			990	2,739					142,200	6,882	
1904.....			840	1,875					900,000	48,600	
1905.....			500	1,800					477,568	24,350	
1906.....			1,234	3,030							
1907.....			1,534	4,602					500	6,700	
1908.....	20,738	65,236	1,016	3,048					217	3,000	
1909.....	29,344	92,812	4,350	10,300					452	3,215	(c)(d) 319,563
1910.....	29,628	84,902	7,112	22,308					895	8,950	(c) 383,875
1911.....	43,544	118,265	7,300	22,100					576	5,760	(c) 632,644
1912.....	20,677	70,689	8,270	23,132							408,110
1913.....	71,252	171,925	12,250	45,980					10	375	363,668
1914.....	110,616	273,716	10,808	40,418							638,771
1915.....	143,303	414,250	11,885	40,554							833,635
1916.....	177,552	555,523	13,051	48,575							
1917.....	288,058	1,080,866	15,778	76,139							17,956
1918.....	268,507	1,133,963	18,169	119,197							
1919.....	117,011	285,832	18,542	115,795							1,316,426
1920.....	148,652	618,283	21,411	162,784					147,692	10,838	1,192,516
1921.....	27,785	101,306	9,967	140,390					13,950	1,070	
1922.....	11,233	39,763	12,854	178,728							
1923.....	25,134	99,716	9,531	125,124							
1924.....	11,429	44,542	10,718	130,677							
1925.....	685	8,799	13,678	174,116					179,545	13,685	
1926.....	371	4,912	14,882	178,986							
1927.....	463	6,077	15,138	181,981							
1928.....	4,974	54,100	14,925	179,187					58,724	3,226	
1929.....	4,579	51,516	15,463	180,492					5,516,806	297,190	
1930.....	7,277	73,855	11,664	133,213					3,527,894	127,004	
1931.....	6,503	65,080	11,806	122,044							
1932.....	3,332	33,320	12,064	111,585							
1933.....	8,196	81,960	15,114	142,134							
1934.....	14,598	145,980	13,934	135,978	5,130	25,599					
1935.....	13,292	132,920	13,710	138,161	14,275	28,550					
1936.....	14,152	141,520	14,461	143,701	10,197	18,049					
1937.....	14,009	140,090	12,457	123,301	6,651	11,506					
1938.....	16,897	168,970	10,853	109,810					120,011	5,883	
1939.....	16,126	161,260	13,144	128,595							
1940.....	18,688	186,880	15,166	154,734	3,491	5,607	1,064	690			
1941.....	10,057	100,570	18,171	204,884	11,453	18,394	3,830	2,432	1,100,949	37,553	
1942.....	18,634	186,340	15,499	174,295	9,500	15,200	162,185	145,241	4,710,394	160,671	
1943.....	16,907	169,070	11,959	131,216	8,600	15,050	494,405	356,478	3,299,812	131,993	
1944.....	17,876	178,760	13,584	153,122	9,900	17,325	63,152	5,212	2,429,176	104,455	
1945.....	16,847	168,470	12,863	141,194			787	714	237,799	15,314	(f) 19,312
1946.....	15,433	154,330	14,439	153,680	14,200	21,868			42,628	3,329	(g) 68,720
Total.....	1,784,364	7,666,368	511,758	4,644,982	93,397	177,148	725,423	510,767		1,075,207	

(a) Includes some soapstone from 1925 to 1931.

(b) 1908 to 1927, sulphur content of pyrites shipped; 1928 to 1946, sulphur content of pyrites shipped plus sulphur recovered from smelter gas.

(c) Includes sand-lime brick and sand and gravel.

(d) Includes peat.

(e) 1898 to 1904, pounds of zinc contained in ores or concentrates shipped; 1905 to 1915, tons of ore or concentrates shipped; 1916 to 1942, pounds of zinc recovered by Canadian smelters and estimated recoveries by foreign smelters.

(f) First commercial production of calcium, 22,720 pounds valued at \$19,312.

(g) Includes 53,548 pounds of calcium worth \$68,720.

NOTE.—In 1919 Ontario produced 48 tons of strontium minerals valued at \$336, in 1920, 75 tons worth \$2,675 were produced, and in 1941, 27 tons worth \$280.

Historical Summary of the Mineral Production of Manitoba

—	Cadmium		Cement		Clay Products	Coal		Copper		Feldspar	
	pounds	\$	barrels.	\$	\$	tons	\$	pounds	\$	tons	\$
1886.....					14,475						
1887.....					8,125						
1888.....					2,400						
1889.....					19,636						
1890.....					15,300						
1891.....					13,300						
1892.....					67,450						
1893.....					*						
1894.....					*						
1895.....					*						
1896.....					*						
1897.....					*						
1898.....					34,000						
1899.....					25,000						
1900.....					25,000						
1901.....					20,000						
1902.....					(a)150,000						
1903.....					(a)150,000						
1904.....					(a)150,000						
1905.....					588,735						
1906.....					517,065						
1907.....					466,432						
1908.....			11,234	16,851	265,091						
1909.....			8,600	8,600	559,008						
1910.....			18,561	21,995	781,605						
1911.....			21,350	28,289	834,428						
1912.....			12,127	16,068	1,018,051						
1913.....			179,342	326,856	514,358						
1914.....			402,131	737,046	317,488						
1915.....			339,554	625,369	93,674						
1916.....			427,293	794,897	104,248						
1917.....			544,949	1,175,669	114,651			1,116,000	308,329		
1918.....			500,302	1,283,948	116,417			2,339,751	576,234		
1919.....					131,737			3,348,000	625,775		
1920.....					206,764			3,062,577	534,604		
1921.....					208,982						
1922.....			429,352	1,126,137	210,740						
1923.....			320,218	817,664	160,134						
1924.....			286,948	746,750	117,450						
1925.....			407,395	1,037,929	173,794						
1926.....			612,155	1,572,401	248,497						
1927.....			551,698	1,378,121	201,464						
1928.....			693,450	1,685,084	291,791						
1929.....			1,000,258	2,350,606	362,240						
1930.....			977,906	2,268,742	215,967			2,087,609	215,018		
1931.....			544,160	1,267,893	122,628	1,306	3,797	45,821,432	3,835,254		
1932.....			242,112	549,594	49,773	1,552	3,684	52,706,861	3,362,803		
1933.....			129,540	295,351	20,966	3,880	9,214	38,163,181	2,844,989		
1934.....			181,166	411,247	37,916	4,113	8,952	30,867,141	2,290,126	1,793	6,763
1935.....			266,457	604,857	74,755	3,106	7,408	38,011,371	2,963,146	2,084	6,252
1936.....	148,133	131,838	348,042	783,095	55,564	4,029	9,525	29,853,220	2,829,190	1,322	7,932
1937.....	164,223	269,326	328,518	745,736	95,531	3,172	7,709	44,920,835	5,874,747		
1938.....	115,166	92,543	330,889	754,427	105,334	2,016	5,660	65,582,772	6,539,914	78	451
1939.....	73,830	52,029	343,717	773,363	78,892	1,138	3,110	70,458,890	7,110,711	40	330
1940.....	57,742	67,154	572,408	1,287,918	102,906	1,697	4,037	75,267,937	7,591,524		
1941.....	61,085	71,714	576,648	1,274,392	84,817	1,246	3,411	67,018,563	6,759,492		
1942.....	29,236	34,498	654,855	1,374,498	80,890	1,265	3,763	47,595,586	4,800,491		
1943.....	20,983	24,130	793,913	1,503,416	132,382	999	2,964	38,014,872	4,466,747		
1944.....	20,921	23,013	865,756	1,698,567	197,383			43,878,639	5,265,437		
1945.....	27,891	27,612	959,398	2,027,629	269,917			41,126,155	5,161,332		
1946.....	63,410	77,360	1,254,946	2,811,264	372,920			38,501,047	4,928,134		
Total	782,620	871,217	16,137,348	36,182,269	.....	29,519	73,234	779,742,438	78,878,997	5,405	22,212

* Data not available by provinces.

(a) Includes production of Alberta and Saskatchewan.

Historical Summary of the Mineral Production of Manitoba—Continued

	Gold		Gypsum		Lime		Natural Gas		Peat		Quartz		Salt	
	fine oz.	\$	tons	\$	bushels	\$	M cu. ft.	\$	tons	\$	tons	\$	tons	\$
1901.			600	7,800	1886—	2,000		480						
1902.			1,554	20,202	1887—	82,800		8,500						
1903.			3,160	20,510	1888—	57,000		8,940						
1904.			4,000	14,000	1889—	52,460		6,646						
1905.			4,500	31,500	1890—	69,550		10,700						
1906.			2,500	11,500	1891—1905	Nil		Nil						
1907.			14,500	111,500	620,201	119,782		84,793						
1908.			17,000	170,000	431,548	84,793		84,793						
1909.			17,000	170,000	138,756	24,132		24,132						
1910.			19,500	195,000	423,954	69,670		69,670						
1911.			43,000	372,000	606,679	100,808		100,808						
1912.			66,500	481,250	706,888	140,629		140,629						
1913.			65,100	479,500	818,237	168,251		168,251						
1914.			65,423	382,563	576,938	107,287		107,287						
1915.			20,278	139,721	526,167	92,898		92,898						
1916.			28,489	191,283	281,432	71,372		71,372						
1917.	9,095		33,347	233,334	555,301	83,794		83,794						
1918.	1,926		37,483	241,832	383,982	32,982		32,982						
1919.	724		32,903	217,337	402,944	134,725		134,725						
1920.	207		44,371	430,894	476,452	147,131		147,131						
1921.	156		40,859	430,882	606,599	210,984	200	200						
1922.	3		34,072	380,514	513,283	136,378	200	200						
1923.	1,180		31,575	380,954	525,184	163,789	200	200						
1924.	4,424		35,068	445,212	524,128	161,258	200	200						
1925.	188		35,068	445,212	394,229	121,518	200	200						
1926.	182		35,068	445,212	450,315	170,280	200	200						
1927.	10,813		39,589	512,008	686,589	251,269	200	200						
1928.	22,455		51,268	639,039	525,194	246,279	200	200						
1929.	464,186		97,269	631,051	523,314	361,944	200	200						
1930.	470,359		94,137	628,247	588,514	280,325	180	180						
1931.	102,060		12,719	113,739	600,400	297,401	600	600						
1932.	122,507		2,920,512	12,719	521,000	172,110	600	600						
1933.	125,310		6,850	66,411	545,270	167,640	600	600						
1934.	142,613		5,583,866	6,850	545,270	167,640	600	600						
1935.	132,921		5,018,551	5,583,866	533,557	163,695	600	600						
1936.	132,973		5,596,636	5,583,866	621,557	215,035	600	600						
1937.	157,049		6,532,200	11,571	575,000	215,035	600	600						
1938.	182,706		6,532,200	11,571	575,000	215,035	600	600						
1939.	189,575		6,532,200	11,571	575,000	215,035	600	600						
1940.	152,553		6,532,200	11,571	575,000	215,035	600	600						
1941.	136,226		5,244,701	20,218	774,363	273,452	600	600						
1942.	91,775		3,533,337	27,089	856,301	265,916	600	600						
1943.	74,168		3,855,468	38,320	854,199	307,132	600	600						
1944.	70,655		2,720,918	49,275	899,857	313,132	600	600						
1945.	73,402		2,918,024	63,167	1,067,328	392,304	600	600						
1946.														
Total.	2,120,293	72,235,164	1,271,932	11,585,631	24,302,171	7,664,205					173,617	241,890	163,393	2,651,100

(a) Rose quartz.

(b) No reports received; estimated in previous years.
NOTE.—In 1935 there were produced 19,179 lb. of lead, valued at \$601; in 1937 lithium minerals valued at \$1,694 were also produced.

Historical Summary of the Mineral Production of Manitoba—Continued

—	Sand and Gravel		Selenium		Silver		Stone					
	tons	\$	lb.	\$	fine oz.	\$	Granite		Limestone		Marble	
							tons	\$	tons	\$	tons	\$
1909.								3,345		328,554		
1910.								3,643		328,029		
1911.								2,268		315,782		
1912.		101,653						1,523		381,572		
1913.		197,719						6,920		382,984		
1914.		314,081						15,654		346,258		
1915.	484,244	203,666						351		153,113		
1916.	1,157,605	243,542								372,894		
1917.	638,802	289,081			7,201	5,863				301,968		
1918.					13,316	12,886	(a)	(a)	(a)	(a)	(a)	(a)
1919.					20,700	23,069	(a)	(a)	(a)	(a)	(a)	(a)
1920.					15,510	15,449	(a)	(a)	(a)	(a)	(a)	(a)
1921.					33	20			16,868	56,666		
1922.	780,231	207,415			20	14			34,356	106,638		
1923.	595,549	123,478			5	3			51,304	118,277		
1924.	359,535	81,897			140	93			54,065	93,876		
1925.	727,152	196,601			477	329			52,770	188,496		
1926.	989,581	178,059			18	11			101,571	357,884		
1927.	1,333,580	228,655			12	7			154,666	318,556		
1928.	1,653,929	262,006			1,763	1,026	114,000	114,000	121,864	494,217		
1929.	1,782,085	322,430			2,644	1,401			191,506	885,826	603	9,191
1930.	1,253,103	453,944			94,653	36,114			146,316	1,075,485	762	9,994
1931.	871,986	294,178	3,870	7,353	836,547	249,877			152,855	636,226	390	6,423
1932.	440,309	188,974			1,036,497	328,275	18	232	78,405	299,050		
1933.	288,214	108,828			1,101,578	416,758	332	2,987	32,858	71,240		
1934.	334,026	95,426	4,127	6,190	1,252,920	594,647	213	2,702	42,914	50,843		
1935.	1,399,659	404,730	65,074	124,942	1,206,454	781,660	387	4,630	146,100	183,892	127	1,233
1936.	1,852,606	545,130	50,760	89,845	791,489	357,175	185	2,038	49,261	69,337	60	90
1937.	1,380,957	551,464	43,920	75,982	905,179	406,253	138	1,796	41,053	63,432		
1938.	1,216,084	645,812	57,788	100,262	1,198,315	520,991	329	6,120	39,049	95,497		
1939.	1,363,593	514,404	(b)	(b)	1,028,485	416,413	174	3,544	35,969	80,404		
1940.	1,851,645	839,993	(b)	(b)	1,033,512	395,308	218	4,324	48,488	74,116		
1941.	1,503,901	429,996	32,179	61,462	966,105	369,641	244	4,155	38,103	60,743		
1942.	1,443,001	427,150	21,209	40,721	821,824	346,530	133	2,452	43,355	69,514		
1943.	1,048,673	293,938	5,239	9,168	587,279	265,767			37,974	50,784		
1944.	1,102,448	296,086	12,957	23,323	569,873	245,045	357	4,967	31,572	48,587		
1945.	1,497,062	516,380	9,258	17,775	533,883	250,925	425	6,130	62,201	79,668		
1946.	1,333,890	416,431	46,118	83,935	528,017	441,686	256	3,766	64,876	238,704		
Total		9,973,147	352,499	640,958	14,554,449	6,483,436						

(a) Total by kinds not available. Total values all kinds of stone: 1918, \$238,251; 1919, \$89,067; 1920, \$374,286.

Historical Summary of the Mineral Production of Manitoba—Concluded

Year	Tellurium		Zinc		Other products
	pounds	\$	pounds	\$	\$
1908.....					(a) 145,000
1909.....					
1910.....					
1911.....					
1912.....					
1913.....					
1914.....					
1915.....					
1916.....					
1917.....					
1918.....					294,493
1919.....					1,340,449
1920.....					2,179,341
1921.....					1,047,453
1922.....					
1923.....					
1924.....					
1925.....					
1926.....					
1927.....					
1928.....					
1929.....					
1930.....					
1931.....			3,882,141	139,757	
1932.....			35,173,749	898,338	
1933.....			41,736,600	1,004,016	
1934.....			43,516,037	1,397,082	
1935.....			47,264,342	1,438,538	
1936.....	340	680	51,129,980	1,584,513	
1937.....	3,928	6,953	36,744,951	1,218,095	
1938.....	5,124	8,865	36,221,314	1,775,569	
1939.....	4,454	7,661	46,864,575	1,440,148	
1940.....	(b)	(b)	40,302,747	1,236,891	
1941.....	(b)	(b)	35,103,373	1,197,376	
1942.....	(b)	(b)	34,879,239	1,189,731	
1943.....	361	578	29,908,179	1,020,168	
1944.....	(b)	(b)	46,783,873	1,871,355 (c)	1,690
1945.....	113	198	45,822,278	1,970,358	
1946.....	89	171	34,860,754	2,245,033	
	349	537	35,580,537	2,778,840	
Total.....	11,758	25,643	645,774,669	21,405,808	

(a) Includes building stone, etc.

(b) No commercial recovery reported by smelter; sometimes recovered by copper refiner but presumed not paid for.

(c) 128 pounds of thallium valued at \$1,690.

NOTE.—In addition there were 177 pounds of tungsten concentrates valued at \$42 shipped in 1918 and 1,399 pounds valued at \$1,300 in 1942; 16 pounds valued at \$16 in 1943.

Historical Summary of the Mineral Production of Saskatchewan

	Cadmium	Clay Products (b)	Coal*		Copper		Gold (e)		Natural Gas		Petroleum	
	pounds	\$	tons	\$	pounds	\$	fine oz.	\$	M cu. ft.	\$	barrels	\$
1886.....		9,400										
1887.....		4,300										
1888.....		1,650										
1889.....		9,216										
1890.....		10,000										
1891.....		23,000										
1892.....		24,337										
1893.....			5,400									
1894.....			8,325									
1895.....			15,051									
1896.....			15,769									
1897.....			26,700									
1898.....			23,000									
1899.....			23,000									
1900.....			25,000									
1901.....			40,300									
1902.....			70,000									
1903.....			17,703									
1904.....			124,898									
1905.....			103,278									
1906.....			136,022									
1907.....			125,459									
1908.....			87,368									
1909.....			130,555									
1910.....			145,816									
1911.....			160,850									
1912.....			226,938									
1913.....			352,943									
1914.....			189,820									
1915.....			98,349									
1916.....			44,409									
1917.....			78,251									
1918.....			133,953									
1919.....			270,989									
1920.....			471,448									
1921.....			160,244									
1922.....			134,705									
1923.....			119,505									
1924.....			187,289									
1925.....			95,922									
1926.....			214,113									
1927.....			311,240									
1928.....			377,893									
1929.....			502,923									
1930.....			349,253									
1931.....			160,257									
1932.....			108,739									
1933.....			887,139									
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2068.....												
2069.....												
2070.....												

Historical Summary of the Mineral Production of Saskatchewan—Continued

	Cadmium		Clay Products (b)	Coal*		Copper		Gold (e)		Natural Gas		Petroleum	
	pounds	\$		tons	\$	pounds	\$	fine oz.	\$	M cu. ft.	\$	barrels	\$
1933.....			92,207	927,649	1,265,996	3,923,941	240,338	5,400	154,440				
1934.....			90,997	909,288	1,241,130	6,413,913	491,077	5,405	186,472				
1935.....			98,150	921,785	1,293,688	11,924,832	890,974	14,323	594,026				
1936.....	111,749	99,457	95,584	1,020,792	1,463,680	14,971,848	1,418,859	48,981	1,715,895				
1937.....	144,533	237,067	115,330	1,049,348	1,404,337	22,393,853	2,934,290	65,886	2,305,351				
1938.....	73,630	59,166	118,713	1,022,166	1,380,416	18,159,137	1,810,532	50,021	1,759,489				
1939.....	66,608	46,939	148,774	959,595	1,255,142	18,133,146	1,829,997	77,120	2,787,194				
1940.....	71,594	83,204	164,828	1,097,517	1,408,540	20,484,954	2,066,112	102,925	3,962,613				
1941.....	108,892	127,769	224,897	1,322,793	1,713,478	32,324,572	3,200,250	138,015	5,313,578				
1942.....	147,314	173,831	271,325	1,601,116	1,760,065	36,781,466	3,726,979	178,871	6,886,533				
1943.....	166,955	191,998	348,725	1,665,972	2,432,249	85,948,719	10,098,373	174,090	6,702,465				
1944.....	119,639	131,603	330,907	1,372,766	2,034,914	73,514,460	8,821,740	122,782	4,727,107				
1945.....	107,741	106,603	271,288	1,532,995	2,327,082	65,900,701	8,070,538	108,568	4,179,898				
1946.....	102,923	125,566	411,446	1,523,786	2,544,923	62,712,954	8,021,538	112,101	4,119,712				
Total.....	1,221,538	1,383,323	27,067,097	42,012,551	492,637,869	55,887,918	1,204,439	45,304,911	1,400,041	472,065	133,060	151,352	

* For the years 1919-1946 the tonnage shown is the total output from all mines; for previous years the figures given include only sales, colliery consumption, and coal used by the operators.

- (a) See Manitoba.
 (b) Includes production from Alberta 1886-1892.
 (c) Includes a small quantity from Manitoba.
 (d) From Turtle Mountain district, Manitoba.
 (e) Complete data relating to recovery of placer gold are not available.
 Note.—In 1907 there were produced 3,700 bush. of lime valued at \$1,480; in 1912, 4,000 bush. valued at \$1,440; and in 1913, 35,000 valued at \$10,000.
 In 1920 there were produced 2 tons magnesium sulphate, valued at \$103; and in 1921, 2 tons valued at \$120.

Historical Summary of the Mineral Production of Saskatchewan—Concluded

—	Quartz*		Salt		Sand and Gravel		Selenium		Silver		Sodium Sulphate	
	tons	\$	tons	\$	tons	\$	pounds	\$	fine oz.	\$	tons	\$
1911												
1912						255,453						
1913						236,377						
1914						222,019						
1915					111,919	38,206						
1916					328,116	60,079						
1917					943,970	112,275						
1918												
1919											15	450
1920											811	19,496
1921			33	790							623	18,350
1922					924,944	306,733					504	11,980
1923					438,319	59,541					733	10,189
1924					702,713	97,045					1,083	6,004
1925					579,901	88,805					3,876	19,380
1926					863,901	145,296					6,775	13,550
1927					1,517,801	263,100					5,659	11,319
1928					2,225,524	431,475					6,016	68,804
1929					3,496,679	687,646					5,018	64,112
1930					3,680,553	751,779					31,571	293,847
1931					1,388,594	396,707					44,957	421,097
1932					362,841	66,942			14	4	22,466	271,736
1933	59,506	59,506	231	4,510	104,400	19,731			114,604	43,358	50,080	485,416
1934	92,447	88,748	452	8,703	533,575	169,033	459	689	87,551	41,552	66,821	587,986
1935	77,177	59,069	101	2,046	502,732	171,170	19,567	37,569	201,608	130,622	44,817	343,764
1936	76,089	49,458			716,910	284,531	25,380	44,923	642,497	289,940	75,598	552,681
1937	95,809	33,533			822,447	470,343	28,080	48,578	821,818	368,840	79,804	617,548
1938	116,898	40,914			1,037,753	662,511	28,612	49,642	898,413	390,603	62,920	552,180
1939	134,192	46,967			1,913,995	408,199	(a)	(a)	1,141,600	462,211	71,455	627,965
1940	159,090	55,681			1,472,885	741,353	(a)	(a)	1,691,540	646,997	94,250	829,539
1941	148,208	51,873			1,220,801	406,835	29,091	55,564	2,047,164	783,266	115,600	931,522
1942	155,699	54,495			679,979	435,798	71,952	138,148	2,664,132	1,123,358	131,258	1,079,692
1943	163,102	57,086			1,288,263	583,687	70,276	122,983	2,812,624	1,272,825	107,121	1,025,151
1944	143,101	50,085			1,163,097	533,175	74,283	133,709	1,735,773	746,382	102,421	987,842
1945	141,799	52,544			1,237,595	563,276	41,209	79,121	1,426,457	670,435	93,068	884,322
1946	130,105	47,542			1,732,731	910,661	94,375	171,762	1,498,496	1,253,492	105,919	1,117,683
Total	1,693,222	747,501				10,579,781	483,284	882,688	17,784,291	8,233,855	1,331,239	11,854,105

* Low grade silica sand for fluxing purposes.

(a) No commercial recovery reported by smelter; sometimes recovered by copper refiner but presumably not paid for.

—	Tellurium		Volcanic Dust		Zinc		Other products
	pounds	\$	tons	\$	pounds	\$	
1908							(a) 71,856
1909							(a) 15,591
1910							(a) 43,349
1911							(a) 64,700
1912							
1913							
1914							
1915							
1916							
1917							158,572
1918							415,402
1919							491,718
1920							105,036
1921							
1922							
1923							
1924			245	1,103			
1925			160	1,380			
1926			90	630			
1927			105	735			
1928			485	9,795			
1929			300	6,000			
1930			242	4,840			
1931			128	2,560			
1932			180	3,600			
1933			118	2,360	2,789,683	89,563	
1934			1	20	2,162,938	65,831	
1935	102	204			8,974,720	278,126	
1936	1,964	3,476			27,692,869	918,019	
1937	3,276	5,667			32,750,910	1,605,449	
1938	2,206	3,794			29,962,597	920,751	
1939	(c)	(c)			37,278,001	1,144,062	
1940	(c)	(c)			44,452,595	1,516,278	(b) 165
1941	(c)	(c)			62,142,288	2,119,673	
1942	(c)	(c)			84,461,520	2,880,933	
1943	1,223	1,957	50	257	96,350,404	3,854,016	
1944	648	1,134			87,130,087	3,746,594	
1945	395	753			75,413,851	4,856,552	
1946	1,299	2,000			71,077,110	5,551,122	
Total	11,113	18,990	2,104	33,280	662,639,573	29,547,119	

(a) Includes sand-lime brick, etc.

(b) 33 tons of grinding pebbles valued at \$165 in 1940.

(c) No commercial recovery reported by smelter; sometimes recovered by copper refiner but presumably not paid for.

Historical Summary of the Mineral Production of Alberta

	Bituminous Sands		Cement		Clay Products	Coal*		Gold		Lime	
	tons	\$	barrels	\$	\$	tons	\$	fine oz.	\$	bushels	\$
1886						43,220	81,112				
1887						74,152	157,577	102	2,100		
1888						115,124	183,354	58	1,200		
1889						97,364	179,640	967	20,000		
1890						128,753	198,298	193	4,000		
1891						174,131	437,243	266	5,500		
1892						178,970	460,605	508	10,506		
1893						230,070	586,260	466	9,640		
1894						184,940	473,827	726	15,000		
1895						169,885	382,526	2,419	50,000		
1896						209,162	581,832	2,661	55,000		
1897						242,163	630,408	2,419	50,000		
1898						315,088	787,720	1,209	25,000		
1899						309,600	774,000	726	15,000		
1900						311,450	778,625	242	5,000		
1901						340,275	850,687	726	15,000		
1902						402,819	960,601	484	10,000		
1903						495,893	1,117,541	48	1,000		
1904						661,732	1,404,524	24	500		
1905						931,917	1,993,915	121	2,500		
1906					191,287	1,246,360	2,614,762	39	800	240,000	56,200
1907					180,217	1,591,579	3,836,286	33	675	173,040	41,225
1908					358,672	1,685,661	4,127,311	50	1,037	135,000	34,500
1909					240,384	1,994,741	4,838,109	25	525	281,125	67,350
1910			323,009	774,473	753,232	2,894,469	7,065,736	89	1,850	303,214	69,268
1911			512,176	1,241,535	1,052,751	1,511,036	3,979,264	10	207	434,038	100,407
1912			821,165	1,775,898	1,356,184	3,240,577	8,113,525	73	1,509	704,035	166,520
1913			956,169	1,947,933	893,408	4,014,755	10,418,941			465,250	115,355
1914			641,395	1,212,342	462,199	3,683,015	9,350,392	48	992	280,252	58,321
1915			233,048	415,009	115,696	3,360,818	8,283,079	195	4,026	74,152	14,445
1916			275,727	477,832	225,140	4,559,054	11,386,577	82	1,695	78,019	20,033
1917			259,423	567,969	309,991	4,736,368	14,153,685			104,540	35,516
1918			200,401	528,672	381,074	5,972,816	20,537,287	27	558	80,408	44,141
1919			(c)	(c)	571,949	4,933,660	18,205,205	24	500	109,067	41,276
1920			(c)	(c)	786,430	6,907,765	30,186,933			139,433	72,477
1921			(c)	(c)	710,477	5,909,217	27,246,514	49	1,013	107,083	48,332
1922			358,209	838,208	700,063	5,990,911	24,351,913			130,627	71,328
1923			318,756	740,940	590,565	6,854,397	28,018,303			87,753	37,999
1924	531	2,127	416,534	945,700	540,477	5,189,729	18,884,318			90,214	36,279
1925	1,148	4,594	395,857	913,529	618,860	5,869,031	20,021,484			98,938	39,852
1926	528	2,112	423,766	873,621	804,933	6,503,705	20,886,103			108,309	39,517
1927	2,706	10,824	601,699	1,303,880	889,358	6,934,462	21,982,058	42	868	130,596	46,947
1928	94	374	834,067	1,732,582	1,162,264	7,336,330	25,532,414	68	1,406	190,629	69,588
1929	989	3,956	808,796	1,770,788	1,342,427	7,150,693	22,928,182	5	103	219,457	79,569
1930	2,067	8,268	525,289	1,144,160	997,685	5,755,528	18,063,225			146,743	49,525
1931	1,015	4,060	626,483	1,286,080	529,716	4,564,015	13,342,675	195	4,205	146,229	46,785
1932	343	1,372	193,571	399,922	329,584	4,870,648	13,526,309	83	1,949	189,771	56,577
1933	466	1,662	149,206	299,530	198,373	4,718,788	12,307,258	324	9,267	214,814	62,037
1934	862	3,449	163,946	326,253	246,677	4,753,810	12,556,099	393	13,553	213,000	65,697
1935	40	160	219,555	436,914	326,679	5,462,894	14,094,795	150	5,279	188,114	57,108
1936			243,534	482,197	315,777	5,696,960	14,659,705	109	3,818	260,829	78,259
1937	35	142	267,106	531,541	338,638	5,562,839	14,563,911	46	1,610	304,314	93,478
1938	(d)	(d)	304,373	611,790	377,337	5,251,233	13,698,470	305	10,728	344,371	107,012
1939	(d)	(d)	377,846	744,357	461,079	5,519,208	14,415,281	359	12,974	357,115	108,632
1940	(d)	(d)	414,183	832,508	838,856	6,203,398	16,377,959	215	8,277	512,857	149,720
1941	(d)	(d)	492,515	985,030	952,144	6,969,962	19,382,471	215	8,277	512,857	151,296
1942	(d)	(d)	668,043	1,307,353	1,013,497	7,754,053	22,624,410	34	1,309	537,743	155,760
1943	(d)	(d)	606,703	1,176,442	978,649	7,676,726	24,030,686	21	808	520,428	149,455
1944	(d)	(d)	699,989	1,370,502	1,143,577	7,423,708	26,814,937	51	1,963	538,629	159,957
1945	(d)	(d)	620,337	1,246,346	1,401,875	7,800,151	27,751,377	7	269	567,286	169,322
1946	(d)	(d)	809,721	1,635,222	1,808,971	8,826,239	33,339,879	110	4,042	679,571	204,926
Total					27,934,638	220,503,158	691,517,823	17,841	403,043	10,968,550	3,271,991

(c) Included in other products.

(d) Now included under petroleum.

* For the year 1919-1946 the tonnage shown is the total output for all mines; for previous years the figures recorded include only sales, colliery consumption and coal used by operators.

Historical Summary of the Mineral Production of Alberta—Continued

—	Natural Gas		Petroleum		Salt		Sand and Gravel		Silver*	
	M cu. ft.	\$	barrels	\$	tons	\$	tons	\$	fine oz.	\$
1903.....		5,675								
1904.....		74,852								
1905.....		63,085								
1906.....		50,077								
1907.....		68,533								
1908.....		63,363								
1909.....		61,722								
1910.....		75,168								
1911.....		110,165								
1912.....		289,906						148,704		
1913.....	7,174,490	1,079,466						265,165		
1914.....	7,172,157	1,214,670						273,115		
1915.....	4,481,947	1,022,814	(a)	(a)			390,617	47,197		
1916.....	6,904,231	1,113,296	(a)	(a)			467,500	67,142		
1917.....	6,744,130	1,299,976	8,500	63,302			709,745	71,216		
1918.....	6,318,389	1,358,638	13,040	100,004			(b)	(b)		
1919.....	8,230,838	1,365,127	16,437	97,841			(b)	(b)		
1920.....	5,633,442	1,181,345	11,032	75,986			(b)	(b)		
1921.....	4,945,884	1,374,599	7,203	49,313			(b)	(b)		
1922.....	5,868,439	1,622,105	6,559	52,128			1,139,961	229,091		
1923.....	7,191,670	1,692,246	1,943	8,227			888,216	199,256		
1924.....	7,131,086	1,796,618	844	4,135			615,594	115,969		
1925.....	9,119,500	2,752,545	183,491	845,394			534,892	107,436		
1926.....	10,794,697	3,019,221	216,050	902,504	833	8,304	1,754,965	412,430		
1927.....	13,434,621	3,586,533	318,741	1,185,948	2,037	22,696	1,392,752	293,674	4	3
1928.....	14,288,605	3,754,466	482,047	1,764,172	100	1,300	2,575,708	489,406	7	4
1929.....	19,112,931	4,684,247	988,675	3,458,177			1,721,930	447,993		
1930.....	20,748,583	4,929,226	1,398,160	4,780,696			1,626,989	433,221		
1931.....	17,798,698	4,067,893	1,413,631	3,976,220			1,050,988	313,616	29	9
1932.....	15,370,968	3,853,794	906,751	2,751,541			734,067	250,025	9	3
1933.....	15,352,811	3,886,263	995,832	2,844,157			281,122	85,577	32	12
1934.....	14,841,491	3,707,276	1,253,966	3,104,823			650,232	196,898	35	17
1935.....	16,060,349	4,113,436	1,263,510	3,102,227			653,511	146,092	16	10
1936.....	17,407,820	4,376,720	1,312,368	3,019,930			894,380	339,928	9	4
1937.....	20,955,506	4,766,437	2,749,085	4,961,002			711,966	312,687	4	2
1938.....	21,822,108	4,807,346	6,751,312	8,775,094	4,045	46,035	792,760	525,175	23	10
1939.....	22,513,660	4,915,821	7,576,932	9,362,363	3,319	37,526	817,168	619,105	32	13
1940.....	27,459,808	4,923,469	8,362,203	10,694,394	6,742	185,430	1,722,465	1,069,667	20	8
1941.....	30,905,440	5,175,364	9,918,577	13,985,906	16,617	260,995	950,484	433,504	21	8
1942.....	34,482,585	6,146,146	10,117,073	15,514,665	22,360	335,960	481,644	218,914	2	1
1943.....	35,569,078	6,241,815	9,601,530	15,724,518	17,499	280,124	626,157	309,389	1	
1944.....	37,161,570	6,339,817	8,727,366	14,468,061	25,335	397,646	833,524	328,151	4	2
1945.....	40,393,061	7,095,910	7,979,786	13,169,692	29,421	430,048	919,736	433,436	1	
1946.....	40,097,096	7,184,006	7,137,921	14,347,933	31,769	441,335	1,812,468	1,060,703	12	10
Total.....		121,311,197	89,720,952	153,192,553	160,077	2,447,899				

* Data not available prior to 1927.

(a) Small output but no record.

(b) Included with other products

Historical Summary of the Mineral Production of Alberta—Concluded

	Sodium Sulphate		Limestone		Sandstone		Other products
	tons	\$	tons	\$	tons	\$	
1908							(d) 690,410
1909							(c) 614,222
1910						90,383	(b) 84,893
1911						240,858	
1912						158,344	
1913						81,391	
1914				20,000		136,984	
1915						60,272	2,200
1916						890	
1917				257			
1918				672		6,810	† 2,695
1919			(a)	(a)	(a)	(a)	152,444
1920			(a)	(a)	(a)	(a)	702,999
1921			(a)	(a)	(a)	(a)	1,575,569
1922					2,962	13,750	1,118,231
1923					554	7,300	
1924							
1925			16,418	16,762	280	2,555	
1926			3,979	6,868			
1927			3,545	5,826	214	8,064	
1928			3,367	7,830			
1929			4,852	15,240	158	9,500	
1930			4,975	12,046	208	12,500	
1931			7,786	17,236	117	4,500	
1932			2,429	5,842	67	3,800	
1933			1,428	2,985			
1934			1,472	4,317	78	4,500	
1935			2,737	8,104			
1936			2,242	6,981			
1937			13,876	26,188	40	3,200	
1938	80	480	13,182	24,935	43	2,254	
1939	89	1,127	1,691	6,148			
1940	30	186	2,888	8,166	155	5,314	(e) 800
1941	10	50	3,981	11,999			
1942	8	32	7,942	24,303			(f) 5,005
1943			12,028	40,456			(f) 1,380
1944			13,961	47,899			(f) 1,425
1945			12,726	43,049			
1946			13,528	54,962			
			13,417	55,286			
Total							

† Includes a small value for copper, zinc and silver.

(a) Data by kinds not available; total values of all kinds of stone produced were: 1918-\$569; 1919-\$3,180; 1920-\$4,415.

(b) Includes lime and sand-lime brick.

(c) Includes cement, lime, etc.

(d) Includes cement, lime, stone, etc.

(e) Marble: 1939-5 tons valued at \$800.

(f) Peat moss: 1942-58 tons valued at \$1,380; 1941-421 tons at \$5,055; 1943-55 tons valued at \$1,425. In previous years included under manufacture.

Historical Summary of the Mineral Production of British Columbia

—	Antimony		Arsenic		Bismuth		Cadmium		Cement		Chromite		Clay Products
	lb.	\$	lb.	\$	lb.	\$	lb.	\$	barrels	\$	tons	\$	\$
1886.													41,150
1887.													19,480
1888.													42,532
1889.													62,317
1890.													67,201
1891.													79,475
1892.													129,234
1893.													*
1894.													*
1895.													*
1896.													*
1897.													*
1898.													100,000
1899.													109,000
1900.													105,000
1901.													101,996
1902.													76,313
1903.													152,748
1904.													158,874
1905.													98,886
1906.													123,277
1907.	63,850	5,108											306,137
1908.													344,446
1909.	61,207	4,285											470,402
1910.													562,360
1911.													675,505
1912.									401,000	601,500			998,568
1913.									511,539	767,038			684,904
1914.									574,258	980,560			413,909
1915.									491,151	833,606			229,763
1916.		13,003							309,436	526,042			292,698
1917.			260,000	11,200					285,679	436,459			334,685
1918.			2,156,000	43,114					207,587	438,009			357,921
1919.			1,060,000	21,218					106,415	283,497	670	31,395	293,478
1920.			1,256,000	22,231					†				596,172
1921.									†				415,869
1922.			1,036,000	21,097					391,090	1,173,270			447,452
1923.			1,217,970	41,780					795,637	1,302,482			426,138
1924.			495,250	19,768					472,327	1,240,331			460,594
1925.			1,277,696	16,978					485,185	1,151,344			523,931
1926.			1,019,200	11,262					544,863	1,239,018			592,495
1927.			1,231,790	13,611					523,931	1,182,552			679,788
1928.			1,334,997	14,903			491,894	341,374	670,796	1,495,204			706,039
1929.			1,487,175	16,433	166,883	283,701	773,976	675,294	680,907	1,487,223	126	900	866,427
1930.			1,773,333	19,595			456,582	337,871	721,044	1,489,233			687,516
1931.					110,876	154,118	323,139	180,958	578,636	1,172,549			498,505
1932.					57	51	65,425	26,824	253,112	536,528			216,355
1933.					70,723	77,795	246,041	78,733	115,286	225,342			174,205
1934.					246,092	297,771	293,611	95,665	122,545	232,009			194,437
1935.					6,718	6,449	580,530	441,203	167,226	314,116			216,636
1936.					360,613	357,007	526,034	468,170	281,549	516,931			280,891
1937.							436,431	715,747	344,072	623,725			349,640
1938.							510,342	410,090	335,488	626,731			365,132
1939.	1,224,385	151,321			409,449	466,362	799,253	563,241	272,679	520,420			371,140
1940.	2,594,492	396,468			40,740	56,384	778,791	905,734	363,366	704,567			520,883
1941.	3,185,077	445,911			12	17	1,081,374	1,269,533	501,945	986,322			558,426
1942.	3,041,030	516,975	(a) 7,114,751	71,148	345,223	476,408	972,413	1,147,447	571,945	1,198,014			560,746
1943.	1,114,166	189,408	(b)	(b)	407,597	562,484	598,673	688,474	534,769	1,146,865			495,163
1944.	1,937,933	281,000	(b)	(b)	123,875	154,844	386,410	425,051	512,594	1,085,918			486,626
1945.	1,667,951	290,557	(b)	(b)	189,815	260,047	510,432	505,328	558,575	1,182,297			661,955
1946.	642,145	96,322	(b)	(b)	234,020	327,678	636,315	776,304	771,955	1,739,966			859,645
Total.					2,712,693	3,451,116	10,467,666	10,053,041	14,458,387	29,439,668	796	32,295	

(a) Arsenic content of gold ores exported; arsenic content not paid for.

* Data not available by provinces.

† Included with other products.

(b) Arsenic is contained in exported ores, but it is not paid for and data relating to its recovery are unobtainable.

Historical Summary of the Mineral Production of British Columbia—Continued

	Coal (a)		Copper		Diatomite		Fluorspar		Gold	
	tons	\$	lb.	\$	tons	\$	tons	\$	fine oz.	\$
1858									34,104	705,000
1859									78,129	1,615,072
1860									107,806	2,228,543
1861									128,973	2,666,118
1862									128,528	2,656,903
1863									189,318	3,913,563
1864									180,722	3,735,850
1865									168,887	3,491,205
1866	(b) 214,410	765,748							128,779	2,662,106
1867	34,988	124,956							120,012	2,480,888
1868	49,286	176,020							114,792	2,372,972
1869	40,098	143,208							85,865	1,774,078
1870	33,424	119,372							64,675	1,336,956
1871									87,048	1,799,440
1872	166,274	593,836							77,931	1,610,972
1873									63,166	1,305,749
1874	90,788	243,183							89,233	1,844,618
1875	109,361	292,932							119,724	2,474,904
1876	157,007	420,555							86,429	1,786,648
1877	156,455	419,076							77,796	1,608,182
1878	213,750	572,544							61,688	1,275,204
1879	260,277	697,170							62,407	1,290,058
1880	305,045	817,080							49,044	1,013,827
1881	257,056	688,542							50,636	1,046,737
1882	323,201	865,716							46,154	954,085
1883	240,075	643,059							38,422	794,252
1884	441,130	1,181,598							35,612	736,165
1885	372,987	999,072							34,527	713,738
1886	375,415	1,005,576							43,714	903,651
1887	486,142	1,302,165							33,558	693,709
1888	539,467	1,445,001							29,834	616,731
1889	636,439	1,704,747							28,489	588,923
1890	767,586	2,056,035							23,918	494,436
1891	1,130,227	3,027,528							20,792	429,811
1892	937,218	2,510,406							19,327	399,525
1893	1,093,980	2,930,304							18,360	379,535
1894	1,112,628	2,980,254	*324,680	31,039					25,664	530,530
1895	1,058,045	2,834,049	*952,840	102,526					61,289	1,266,954
1896	1,003,769	2,688,666	*3,818,556	415,459					86,504	1,788,206
1897	1,019,390	2,730,510	*5,325,180	601,213					131,805	2,724,657
1898	1,263,680	3,384,858	*7,271,678	874,783					142,215	2,939,852
1899	1,431,101	3,833,307	*7,722,591	1,359,948					230,295	4,202,473
1900	1,791,833	4,799,553	*9,977,080	1,615,289					228,916	4,732,105
1901	1,919,488	5,141,487	*27,603,746	4,448,896					257,292	5,318,703
1902	1,808,441	4,844,040	*29,636,057	3,445,485					288,383	5,961,409
1903	1,676,581	4,490,844	*34,359,921	4,547,738					284,108	5,873,036
1904	1,862,625	4,989,174	*35,710,128	4,579,110					245,975	5,704,908
1905	1,945,452	5,211,030	*37,692,251	5,876,222					285,529	5,902,402
1906	2,146,262	5,748,915	*42,990,488	8,287,706					269,886	5,579,039
1907	2,364,898	7,390,306	*40,832,720	8,168,177					236,216	4,883,020
1908	2,333,708	7,292,838	37,041,115	4,892,390					286,858	5,929,880
1909	2,606,127	8,144,147	35,658,952	4,629,245					250,320	5,174,579
1910	3,330,745	10,408,580	35,270,006	4,492,693					261,386	5,403,318
1911	2,542,532	7,945,413	35,279,558	4,366,198					238,496	4,930,145
1912	3,208,997	10,028,116	50,526,656	8,256,561					251,815	5,205,485
1913	2,714,420	8,482,562	45,791,579	6,991,916					297,459	6,149,027
1914	2,239,799	6,999,374	41,219,202	5,606,636					252,730	5,224,933
1915	2,065,613	6,455,041	56,692,988	9,793,714					273,376	5,651,184
1916	2,584,061	8,075,190	63,642,550	17,312,046					219,633	4,540,216
1917	2,433,888	8,235,716	57,730,959	15,691,275					133,742	2,764,693
1918	2,568,589	11,494,681	62,865,681	15,482,560			175	5,250	180,163	3,724,300
1919	2,649,516	13,512,532	60,502,079	8,317,884			1,638	38,556	167,252	3,457,406
1920	3,085,011	18,105,814	45,319,771	7,911,019			7,477	171,971	124,808	2,580,010
1921	2,890,291	15,676,774	34,447,127	4,306,580			5,403	134,523	150,792	3,117,147
1922	2,927,033	14,622,317	31,936,182	4,273,700			4,219	98,233	207,370	4,286,718
1923	2,823,306	13,813,520	55,224,737	7,963,959			75	1,135	200,140	4,137,261
1924	2,193,667	10,601,998	65,451,246	8,524,370					245,719	5,079,462
1925	2,742,252	11,720,373	69,221,600	9,720,097			3,874	19,034	219,227	4,531,824
1926	2,613,719	10,612,915	89,108,017	12,292,450					225,864	4,669,065
1927	2,746,243	10,934,777	91,686,297	11,845,870					183,094	3,784,889
1928	2,804,594	11,094,353	102,283,210	14,902,664	160	4,800			196,617	4,064,434
1929	2,490,378	10,160,789	103,903,738	18,772,778	175	5,250	17,800	267,000	154,204	3,187,680
1930	2,083,818	8,421,572	93,318,885	12,114,657	146	5,147			164,331	3,397,023
1931	1,876,406	7,150,996	65,223,348	5,459,194	66	2,240			160,069	3,451,865
1932	1,681,490	6,392,801	50,580,104	3,227,111	47	440			199,004	4,672,429
1933	1,382,272	5,306,287	43,146,724	3,216,502	14	410			238,995	6,835,257
1934	1,485,969	5,351,108	48,246,924	3,579,583	6	190			296,196	10,218,762
1935	1,331,287	5,043,510	38,478,043	2,999,525	57	1,880			391,633	13,781,565
1936	1,489,171	5,493,425	21,169,343	2,006,219	10	350			451,938	15,831,388
1937	1,598,843	5,863,849	45,797,988	5,989,461	124	1,346			505,857	17,699,936
1938	1,440,287	5,237,077	65,759,265	6,557,514	14	362			605,617	21,302,578
1939	1,537,905	5,464,061	73,253,408	7,392,734	17	447			626,970	22,659,323
1940	1,867,846	6,157,250	77,742,582	7,841,117	7	171			617,011	23,754,924
1941	2,020,844	6,492,672	66,327,166	6,689,758	105	2,625			608,203	23,415,816
1942	2,168,541	7,566,822	50,015,521	5,044,565	147	2,547	1,559	25,498	474,339	18,262,052
1943	2,039,402	7,648,720	42,222,205	4,961,109	16	866			241,346	9,291,821
1944	2,134,231	9,009,506	36,302,628	4,356,315	8	262			196,857	7,578,994
1945	1,699,768	7,137,859	25,751,252	3,231,782	22	498			186,854	7,193,879
1946	1,636,792	7,153,300	17,500,538	2,240,068	41	1,027			136,242	5,006,993
Total	119,905,640	432,121,093	2,399,857,090	337,607,410	1,182	30,888	42,220	761,200	16,328,005	425,755,949

NOTE.—In 1928, 1,730 pounds of cobalt were produced, valued at \$420.

* Metal content of ores shipped as published by British Columbia Department of Mines.

(a) The tonnage shown for 1919-1946, inclusive, is, the total output from all mines. For previous years the figures include liary consumption and coal used by operators.

(b) 1836-1866, inclusive.

Historical Summary of the Mineral Production of British Columbia—Continued

—	Gypsum		Iron Ore		Iron Oxides		Lead		Lime		Magnesium Sulphate	
	tons	\$	tons	\$	tons	\$	lb.	\$	bushels	\$	tons	\$
1886			3,941						4,000	2,500		
1887			2,796				204,800	9,216	10,080	2,688		
1888			8,372				674,500	29,813	13,000	3,900		
1889			15,487				165,100	6,488	60,000	15,200		
1890									30,000	8,000		
1891			950									
1892			2,300				808,420	33,064				
1893			1,325				2,131,092	79,490				
1894			1,120				5,703,222	187,636				
1895			1,222				16,461,704	531,716				
1896			196				24,199,977	721,159				
1897			2,099				38,841,135	1,390,513				
1898			280				31,693,559	1,198,017				
1899			2,071				21,862,436	977,250				
1900			1,110				63,158,621	2,760,031				
1901			7,000				51,582,906	2,235,603				
1902			10,019				22,536,381	917,005				
1903			2,290				18,089,283	766,443				
1904							36,646,244	1,579,086				
1905							56,580,703	2,663,254				
1906							52,408,217	2,964,733	106,192	26,694		
1907			2,500				47,738,703	2,642,086	159,963	49,847		
1908							43,195,733	1,814,221	176,435	44,027		
1909							45,857,424	1,692,139	231,269	75,076		
1910							32,987,508	1,216,249	196,878	72,657		
1911	780	1,875					23,784,969	827,717	351,014	117,756		
1912							35,763,476	1,597,554	517,329	181,905		
1913	200	1,300					37,628,899	1,753,037	362,571	115,355		
1914							36,289,845	1,625,422	151,689	56,767		
1915							45,377,064	2,541,116	152,237	49,725		
1916							39,157,701	3,333,496	194,042	66,301		
1917			20				29,483,725	3,283,602	232,955	58,067	929	4,645
1918			2,200	6,600			47,594,328	4,402,475	401,562	143,697	1,949	14,565
1919			1,200				40,060,113	2,790,587	351,253	187,963	738	9,115
1920			1,212	7,272			32,792,725	2,931,670	561,305	341,632	1,947	39,886
1921	40	100	1,010	3,030	169	845	60,298,603	3,462,346	199,341	252,630	2,029	39,506
1922	100	500	1,255	3,528	3	120	87,093,266	5,430,265	516,830	284,641	1,021	24,017
1923	323	1,615	243	1,215	513	6,450	99,541,818	7,146,107	690,971	388,494	121	6,580
1924	30	150	28		120	2,620	168,467,628	13,652,617	636,348	370,829		
1925	240	865			133	2,740	242,454,502	22,111,850	649,858	364,435		
1926	20,916	156,964			108	920	266,812,461	18,012,509	728,633	416,882		
1927	24,493	201,754			194	1,350	292,770,544	15,388,020	688,890	376,683		
1928	20,982	229,843			136	1,815	317,722,146	14,537,377	1,004,257	473,996		
1929	24,696	243,814			298	2,000	307,999,153	15,555,189	1,131,171	510,592		
1930	32,128	248,458			6	120	321,803,725	12,637,232	1,043,343	335,057		
1931	20,544	176,173			110	1,000	261,902,236	7,097,812	852,171	277,269		
1932	10,728	84,084			223	2,000	252,007,574	5,326,432	490,057	160,001		
1933	5,107	46,004			165	1,485	263,345,776	6,298,178	591,914	162,925	120	3,360
1934	9,661	48,081			161	1,600	344,467,138	8,392,597	562,486	153,856	42	1,100
1935	7,618	52,335			159	1,687	336,784,326	10,552,059	457,257	99,960	340	7,965
1936	14,078	77,258			396	4,000	376,645,367	14,738,133	690,257	134,785	654	13,712
1937	15,764	108,478			580	6,000	403,589,913	20,623,445	792,543	154,037	727	14,456
1938	17,451	100,080			434	4,560	413,706,307	13,834,339	561,571	174,161	470	9,400
1939	18,150	100,641			550	5,917	378,440,666	11,992,784	652,886	197,259	550	9,900
1940	19,987	120,043			376	3,948	466,849,112	15,695,467	811,086	234,534		
1941	23,862	141,320			275	2,884	456,840,454	15,358,976	1,014,343	244,051	265	7,343
1942	23,313	146,154			438	4,604	507,199,704	17,052,054	886,686	236,904	1,140	38,760
1943	24,412	148,348			403	4,836	439,155,635	16,485,902	1,087,056	305,421		
1944	24,222	103,927			482	8,200	292,922,888	13,181,530	1,251,971	389,896		
1945	23,617	70,032			397	1,985	336,976,468	16,848,823	1,451,114	467,588		
1946	47,649	387,404			427	5,867	345,862,680	23,345,731	1,402,143	570,252		
Total	431,101	2,997,620			7,256	79,553	9,023,118,693	396,159,662	25,108,957	9,347,908	13,042	244,310

NOTE.—There was a production of 803 tons of magnesite, valued at \$7,211 in 1921; and in 1916, 635 tons, valued at \$9,525. Also in 1941, 10,905 pounds of magnesium metal in powder form were produced from B.C. magnesite, at Trail, valued at \$2,944; the corresponding output in 1942 was 193,727 pounds at \$85,240.

Historical Summary of the Mineral Production of British Columbia—Continued

—	Barite		Manganese Bog		Mercury (a)		Mica*		Mineral Waters	Natro-Alunite		Phosphate	
	tons	\$	tons	\$	lb.	\$	lb.	\$	\$	tons	\$	tons	\$
1895					71	2,343							
1896					58	1,940							
1897					9	324							
1900					flasks(a)								
1910									4,000				
1911									3,500				
1912									4,200				
1913									4,800				
1914									2,330				
1915									1,400				
1916									1,250				
1917									1,382				
1918			440	6,230					1,455				
1919			616	10,559					1,800				
1920			587	6,889									
1921										30	1,500		
1922										50	2,500		
1923										15	750		
1924													
1925										20	1,000		
1926													
1927										7	248	38	494
1928												550	7,150
1929			1	30								1,145	4,580
1930													
1931													
1932													
1933							46,000	853				2,109	4,670
1934							114,000	2,045					
1935													
1936													
1937													
1938					760	760	96,250	1,562					
1939					436	1,226	(b)	(b)					
1940	8	80			153,830	369,317	160,000	2,600					
1941	228	1,140			536,304	1,335,697	296,000	3,678					
1942	1,917	16,084			1,035,914	2,943,807	562,000	9,061					
1943	1,924	15,831			1,690,240	4,559,200	710,000	11,821					
1944	12,613	52,922			735,908	1,210,375	942,000	15,382					
1945	31,155	45,780					1,284,000	17,136					
1946	2,728	19,000					1,615,500	23,420					
Total.....	50,573	150,840	1,614	23,708		10,424,989			26,117	122	5,998	3,842	16,894

(a) 1895-1897—recorded as flasks, 1897 to 1906 no production; 1908—no production.

(b) Not published.

* 1899—Production valued at \$525 included in Dominion total as Ontario and Quebec.

Note.—1937—Nickel production valued at \$37,753; and in 1936 a relatively small tonnage of nickel ore exported; no data available.

1918—Molybdenite production of 1,600 pounds, valued at \$1,840; 1917—3,705 pounds, valued at \$3,705 and in 1916 production valued at \$13,003, including antimony. In 1942 there were 4,887 pounds of molybdenite concentrates valued at \$2,907 shipped to the Quyon plant, Quebec, from an old stock pile in Renfrew county, Ontario.

Historical Summary of the Mineral Production of British Columbia—Continued

	Platinum		Other Platinum Metals (Palladium, Rhodium, etc.)		Quartz		Sand and Gravel		Silver		Sodium Carbonate		Tungsten Concentrates	
	fine oz.	\$	fine oz.	\$	tons	\$	tons	\$	fine oz.	\$	tons	\$	pounds	\$
1887		5,600							17,690	17,301				
1888		6,000							79,780	74,993				
1889		3,500							53,192	49,787				
1890		4,500							70,427	73,666				
1891		10,000							3,266	3,266				
1892		3,500							77,160	67,592				
1893		1,800							195,000	195,000				
1894		1,950							746,379	470,219				
1895		3,800							1,496,522	976,930				
1896		7,500							3,135,343	2,102,561				
1897		1,600							5,472,971	3,272,289				
1898		1,500							4,292,401	2,500,753				
1899		825							2,639,413	1,751,302				
1900									3,658,175	2,427,548				
1901		457							5,151,333	3,036,711				
1902		190							3,917,917	2,043,586				
1903		420							2,996,204	1,601,471				
1904		500							3,222,481	1,843,935				
1905									3,439,417	2,075,757				
1906									2,990,262	1,997,226				
1907									2,745,448	1,793,519				
1908									2,631,989	1,391,058				
1909									2,649,141	1,364,387				
1910									2,407,887	1,287,883				
1911									1,887,147	1,005,924				
1912									385,946	1,612,737				
1913	18	489							180,863	1,980,483				
1914					30,559	61,118	888,240	391,731	3,312,343	1,731,971				
1915	23	1,063			41,077	82,154	578,424	256,454	3,159,897	1,771,658				
1916	15	600			37,755	132,143		230,197	3,565,852	2,227,794				
1917	57	3,823			49,686	149,658			3,392,872	2,102,430				
1918	39	2,560			32,715	340,313			2,655,994	2,162,430				
1919	25	2,150			35,876	141,200			3,921,336	3,794,755				
1920	17	719			22,288	62,317			3,713,537	3,426,556				
1921	23	1,726			37,521	172,888			3,327,028	3,356,971				
1922	12	1,154			17,425	37,521	990,251	304,071	3,350,357	2,099,133	197	14,775		
1923	7	816			25,590	47,029	434,194	266,119	7,150,937	4,828,384	202	3,027		
1924	5	569			21,358	43,034	1,105,459	344,937	6,113,327	3,995,899	265	3,975		
1925	6	715			853	48,094	1,446,396	446,396	8,153,003	5,444,657	510	5,173		
1926	50	4,258			6,466	77,060	1,486,254	357,985	10,679,458	5,925,403	1,120	8,140		
1927	11	960			20,859	80,824	1,379,143	342,021	10,625,816	6,599,376	585	5,370		
1928	80	4,549			16,017	43,876	2,334,270	529,669	11,040,445	6,223,499	519	5,370		
1929	45	2,828			177	6,836	2,425,996	665,132	10,943,367	6,306,413	600	4,922		
1930	24	1,030			1,095	5,291	2,494,743	819,739	11,156,408	5,382,185	364	8,100		
									11,825,930	4,512,065		4,550		

Historical Summary of the Mineral Production of British Columbia—Continued

	Platinum		Other Platinum Metals (Palladium, Rhodium, etc.)		Quartz		Sand and Gravel		Silver		Sodium Carbonate		Tungsten Concentrates	
	fine oz.	\$	fine oz.	\$	tons	\$	tons	\$	fine oz.	\$	tons	\$	pounds	\$
1931.....	50	1,783	.....	.....	519	1,297	2,726,704	914,322	8,061,599	2,408,000	712	7,351	.....	.....
1932.....	59	2,372	.....	8,435	15,621	8,435	1,487,513	525,604	7,293,432	2,300,958	495	3,450	.....	.....
1933.....	40	1,400	.....	17,681	22,668	13,990	951,672	332,932	6,737,037	2,548,807	539	3,773	.....	.....
1934.....	53	2,051	.....	13,990	24,847	4,771	958,149	335,142	8,729,721	4,143,204	244	1,320	.....	.....
1935.....	39	1,275	.....	4,771	11,056	788	1,381,720	481,620	9,178,400	5,946,677	242	1,450	.....	.....
1936.....	20	809	.....	.....	146	.....	1,753,415	596,796	9,748,715	4,399,303	102	745	.....	.....
1937.....	22	1,066	.....	.....	.....	.....	1,648,963	733,935	11,530,177	5,174,859	296	2,177	.....	.....
1938.....	16	515	.....	.....	.....	.....	2,211,682	751,491	11,136,563	4,863,582	252	2,208	.....	.....
1939.....	877	.....	.....	.....	.....	.....	2,284,995	870,268	10,648,031	4,311,175	300	2,400	8,325	4,917
1940.....	938	.....	.....	.....	.....	.....	2,087,878	809,075	11,835,556	4,546,160	220	1,700	9,382	91,387
1941.....	24	2,293	.....	1,579	631	1,579	2,960,924	1,151,322	11,233,788	4,268,100	186	1,488	34,436	231,453
1942.....	40	1,528	.....	2,037	815	2,037	2,599,861	1,091,202	10,596,294	4,467,996	256	2,048	250,630	238,500
1943.....	7	270	.....	77,124	38,562	77,124	2,257,784	877,413	8,995,438	4,070,818	468	5,148	976,632	632,700
1944.....	.....	.....	.....	73,156	24,682	73,156	4,357,362	1,194,859	5,631,572	2,421,576	44	3,484	818,000	236,788
1945.....	.....	.....	.....	.....	.....	.....	3,721,240	1,066,796	5,620,323	2,641,552	286	3,146	.....	.....
1946.....	.....	.....	.....	26,865	9,028	26,865	4,505,236	1,798,577	6,078,419	5,084,597	.....	.....	.....	.....
Total.....	518,636	1,579,470	.....	19,653,144	317,175,369	171,173,413	9,919	113,944	2,091,590	1,185,636	.....	.....	.....	.....

NOTE.—In addition there was produced in 1931-731 pounds of selenium valued at \$1,389.

Historical Summary of the Mineral Production of British Columbia—Continued

STONE

—	Granite		Limestone		Marble		Sandstone		Grindstones, pulpstones		Slate	
	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$
1909.....		134,310		37,258		25,000		168,513				
1910.....		244,767		43,121		3,679		130,825				
1911.....		460,851		56,748		1,600		179,580				
1912.....		624,178		55,617				99,816				
1913.....		469,666		38,830		600		71,783				
1914.....		918,131		51,435		3,343		51,774				
1915.....		701,593		79,583		1,700		14,000				
1916.....		464,949		92,769				6,500				
1917.....		66,170		89,808				110,000				
1918.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)				
1919.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)				
1920.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)				
1921.....	108,225	186,629	33,816	42,536								
1922.....	159,904	268,008	36,566	44,583			1,200	12,000				
1923.....	151,389	230,582	13,711	19,284								
1924.....	150,522	248,360	27,053	21,881			650	83,500	240	19,000		
1925.....	192,177	264,910	58,172	54,059			5,877	18,227	481	27,781		
1926.....	163,077	244,197	81,844	106,220			8,140	7,830	700	45,116		
1927.....	174,945	241,412	81,008	107,984	600	18,600			380	27,600		
1928.....	201,030	275,947	68,179	83,193	950	31,400	1,280	1,280	246	20,509		
1929.....	286,883	340,011	119,222	143,319	196	5,282	2,630	23,043	210	2,730		
1930.....	229,000	283,739	122,409	145,443	6,363	31,141	3,319	258,172	329	26,222	150	3,000
1931.....	302,150	322,014	159,198	152,269	810	8,761	9,559	592,740	322	25,795	250	5,000
1932.....	266,008	261,144	138,132	109,399	482	4,029	3,020	3,480	60	3,500	250	3,750
1933.....	94,967	109,512	150,805	130,706	300	2,547	4,200	10,760	200	9,000	250	3,750
1934.....	48,809	73,081	161,755	142,560	150	1,416			402	17,625	312	3,744
1935.....	118,782	100,432	215,933	189,381	604	5,471	21,576	63,006	202	10,829	310	3,100
1936.....	243,427	131,750	122,535	123,607	175	2,110	18,434	135,944	87	4,500	184	2,479
1937.....	273,692	318,725	176,513	177,939			13,220	52,561	87	4,875	186	2,790
1938.....	148,896	160,457	125,842	124,322			13,325	41,825			274	3,295
1939.....	101,214	120,404	205,045	200,842			6,460	29,060			419	5,428
1940.....	162,126	157,666	282,170	282,095	180	2,600	6,320	20,337			474	6,883
1941.....	129,941	146,403	201,359	229,702	300	2,800	8,640	15,650			950	12,216
1942.....	95,604	133,810	199,496	230,139	100	1,820	13,930	13,930			1,211	16,643
1943.....	63,695	101,210	163,127	213,544	85	1,450	8,160	8,160			1,145	17,542
1944.....	12,716	76,052	181,141	249,373	125	2,155	4,860	3,000			949	17,903
1945.....	29,726	44,722	250,106	332,432	160	2,700	3,160	3,160			969	16,272
1946.....	78,341	110,651	208,242	287,433	260	4,920	8,360	8,360			1,116	19,917
Total.....												

(a) Data by kinds not available; total values of all kinds of stone were:—1918-\$187,842; 1919-\$217,006; 1920-\$276,505.

Historical Summary of Mineral Production of British Columbia—Concluded

—	Peat moss		Sulphur*		Talc		Tin		Zinc†		Other products
	tons	\$	tons	\$	tons	\$	pounds	\$	tons	\$	
1905.....									9,413	139,200	
1906.....									654	17,100	
1907.....									1,356	46,100	
1908.....									(a) 17,476	233,749	(d) 643,534
1909.....									4,487	114,243	(c) 330,201
1910.....									2,590	101,072	(b) 494,197
1911.....									6,405	211,399	
1912.....									7,554	180,127	
1913.....									9,924	252,546	671
1914.....									14,595	535,438	15,833
1915.....									lb.		
1916.....			1,060	5,300	53	848			21,701,560	2,778,667	
1917.....			5,709	28,545	25	400			27,861,441	2,479,947	241,661
1918.....			18,238	63,454					32,280,247	2,633,745	103,739
1919.....			6,730	33,650	100	500			30,295,015	2,223,048	373,193
1920.....			11,275	56,376	110	3,100			38,729,762	2,970,960	1,270,298
1921.....			3,597	4,557	167	4,175			53,089,356	2,471,310	925,361
1922.....			6,908	34,540	191	4,780			56,290,000	3,217,536	
1923.....			3,457	13,304	245	5,390			60,050,000	3,967,504	
1924.....			8,091	40,459	165	3,630			96,000,069	6,090,244	
1925.....			2,670	13,350	92	1,589			99,152,966	7,537,439	
1926.....			3,374	16,870					137,033,929	10,154,214	
1927.....			37,379	149,516	107	2,620			148,306,479	9,186,103	
1928.....			32,063	254,872					163,530,890	8,983,079	
1929.....			28,276	226,208	46	720			172,096,841	9,270,857	
1930.....			17,800	147,942	177	2,835			250,479,310	9,017,255	
1931.....			29,013	255,760	30	600			202,071,702	5,160,911	
1932.....			31,886	302,856	39	702			130,546,958	3,140,438	
1933.....			30,010	282,078	67	1,022			152,826,264	4,906,487	
1934.....			32,031	319,124	25	502			249,152,403	7,583,202	
1935.....			46,784	453,536	93	1,318			255,222,315	7,909,314	
1936.....			64,896	608,792	47	799			255,668,874	8,475,413	
1937.....			88,370	820,406					287,192,877	14,078,195	
1938.....			78,918	777,586					299,363,564	9,199,443	
1939.....	(e)	(e)	133,676	1,230,814					279,041,497	8,563,784	
1940.....	(e)	(e)	90,214	899,126					312,020,671	10,643,025	
1941.....	14,345	390,509	103,140	1,026,794			64,744	33,667	367,869,579	12,548,031	
1942.....	28,520	658,771	116,248	1,134,586			1,237,863	643,689	387,236,469	13,208,636	(f) 4,710
1943.....	35,755	925,408	104,601	1,039,126			776,937	450,623	336,150,455	13,446,018	
1944.....	45,794	1,259,131	113,325	1,123,478			516,626	299,643	278,063,373	11,956,725	
1945.....	50,597	1,292,297	127,654	1,267,317			849,983	492,990	294,791,635	18,984,581	
1946.....	49,263	1,546,149	126,622	1,255,008			874,186	507,028	274,269,956	21,420,484	
Total.....			1,504,015	13,885,330	1,779	35,530	4,320,339	2,427,640		256,060,569	

NOTE.—1934—Production of 30 tons of volcanic dust, valued at \$600.

* Sulphur content of pyrites shipped and sulphur content salvaged smelter gas 1928-1942; figures for previous years represent tonnages and value of pyrites shipped.

† 1905-1915 tons of ore or concentrates shipped from mines; 1916-1946 refined zinc made in Canada plus concentrated zinc in ores exported.

(a) Includes 7,424 tons shipped late in 1908.

(b) Includes cement sand-lime brick, etc.

(c) Includes cement, sand-lime brick, and a small value in refined antimony.

(d) Includes stone, etc.

(e) Included with manufactures.

(f) 471 pounds of indium valued at \$4,710.

Historical Summary of the Mineral Production of Yukon

—	Coal (d)		Copper		Gold (c)		Lead		Silver	
	tons	\$	pounds	\$	fine oz.	\$	pounds	\$	fine oz.	\$
1885.										
1886.					4,837	100,000				
1887.					3,386	70,000				
1888.					1,935	40,000				
1889.					8,466	175,000				
1890.					8,466	175,000				
1891.					1,953	40,000				
1892.					4,233	87,500				
1893.					8,514	176,000				
1894.					6,047	125,000				
1895.					12,094	250,000				
1896.					14,513	300,000				
1897.					120,937	2,500,000				
1898.					483,750	10,000,000				
1899.					774,000	16,000,000				
1900.					1,077,553	22,275,000				
1901.	(e) 5,864	86,230			870,750	18,000,000			230,000	137,034
1902.	4,910	37,280			701,437	14,500,000			290,000	177,857
1903.	1,849	29,584			592,594	12,250,000			195,000	114,953
1904.					507,938	10,500,000			185,800	96,985
1905.	7,000	21,000			381,001	7,876,000			156,000	83,362
1906.	7,000	28,000	(b) 156,000	23,400	270,900	5,600,000			133,170	76,201
1907.	15,000	60,000	511,838	102,388	152,331	3,150,000			89,630	54,093
1908.	3,847	21,158	112,264	14,828	174,150	3,600,000			63,665	42,522
1909.	7,364	49,502			191,565	3,960,000			35,988	23,510
1910.	16,185	110,925	286,000	36,431	211,091	4,570,362			63,000	33,304
1911.	2,840	12,780			224,197	4,634,574			45,000	23,176
1912.	9,245	44,958	1,772,660	289,670	268,447	5,549,296			87,418	46,756
1913.	19,722	95,945	1,843,530	281,489	282,838	5,846,780	2,804	131	112,708	60,078
1914.	13,443	53,760	1,367,050	185,946	247,940	5,125,374	47,920	2,146	81,068	49,318
1915.	9,724	38,896	533,216	92,113	230,173	4,758,098	810,000	45,360	87,626	52,392
1916.	3,300	13,200	2,807,096	763,586	212,700	4,396,900	955,222	81,313	248,040	123,241
1917.	4,872	(f) 29,232	2,460,079	668,650	177,667	3,672,703	127,844	14,238	360,101	232,446
1918.	2,900	11,600	619,878	152,663	102,474	2,118,325	9,249	856	119,605	97,379
1919.			165,184	30,874	90,705	1,875,039			71,915	69,594
1920.			277,712	48,478	72,778	1,504,455			27,556	30,621
1921.	233	2,472			65,994	1,364,217	2,472,615	141,978	19,190	19,363
1922.	465	4,650			54,456	1,125,705	3,323,508	207,221	393,092	246,288
1923.	313	1,485			60,144	1,243,287	6,771,113	486,098	663,493	447,997
1924.	1,121	8,265			34,825	719,897	903,520	73,221	1,914,438	1,241,953
1925.	730	7,147			47,817	988,465	1,875,442	171,040	226,755	151,429
1926.	316	800			25,601	529,220	5,860,373	395,634	904,893	624,964
1927.	414	2,052			30,835	639,483	4,165,331	218,929	2,095,027	1,301,159
1928.	414	2,915	(a) 107,377	15,645	34,364	710,367	7,191,449	329,045	1,647,295	928,580
1929.	458	1,848			35,892	741,954	8,395,603	424,012	2,839,633	1,651,985
1930.	653	3,110	42,628	5,534	35,517	734,202	8,896,582	349,369	3,279,530	1,737,922
1931.	904	5,039			44,310	955,539	4,454,613	120,724	3,746,326	1,429,373
1932.	808	3,491			40,608	953,438	3,853,327	81,444	3,694,728	1,103,615
1933.	862	3,670			39,493	1,129,500	3,099,505	74,128	3,014,755	954,822
1934.	638	2,217			38,798	1,338,531	1,783,349	43,450	2,204,237	833,925
1935.	835	3,483			35,707	1,256,529	2,181,513	6,846	515,542	244,681
1936.	510	2,286			50,358	1,764,041	2,568,699	100,513	54,715	35,450
1937.	84	812			47,982	1,678,890	6,440,454	329,107	783,416	353,532
1938.	361	3,400			72,368	2,545,544	5,198,990	173,854	3,956,504	1,775,719
1939.					87,745	3,171,192	7,544,332	239,089	2,844,659	1,236,772
1940.					80,458	3,097,633	4,655,689	156,524	3,830,864	1,551,040
1941.					70,959	2,731,922	1,703,728	57,280	2,259,343	864,176
1942.					83,246	3,204,971	1,322,065	44,448	856,772	327,810
1943.					41,160	1,584,660	195,715	7,347	482,133	203,296
1944.					23,818	916,993	105,727	4,758	52,348	23,690
1945.					31,721	1,221,258	119,516	5,976	32,066	13,788
1946.					45,286	1,664,260	52,144	3,520	25,158	11,824
Total.	145,184	803,192	13,062,512	2,711,695	9,753,972	213,813,104	95,125,241	4,383,604	45,144,514	21,021,058

(a) Includes small quantities produced in 1925, 1926 and 1927.

(b) 1906 and all previous production.

(c) Placer gold but includes a small production from lode mines in 1926 and for the years 1910-1923.

(d) For the years 1919-1938 the tonnage shown is the total output from all mines; for previous years the figures show include only colliery consumption, sales and coal used by operators.

(e) Partly mined in 1900.

(f) Value estimated.

NOTE.—In addition there were produced in 1918 some 3,848 pounds of tungsten concentrates valued at \$2,593 and in 1916, 20 tons of antimony ore valued at \$160; also in 1941 tungsten concentrates totalled 1,560 pounds valued at \$980 and in 1942, 968 pounds valued at \$840, in 1943, 12,083 pounds valued at \$10,122, and in 1944, 5,593 pounds worth \$3,780. Antimony in ore exported in 1942 totalled 78 pounds worth \$13.

Historical Summary of the Mineral Production of Northwest Territories

—	Pitch- blende Products	Copper		Gold		Lead		Natural Gas		Petroleum		Silver (a)	
		pounds	\$	fine oz.	\$	pounds	\$	M cu. ft.	\$	barrels	\$	fine oz.	\$
1931..												(*)	(*)
1932..										910	9,251	38,433	12,172
1933..	247,900									4,608	23,037	23,239	8,792
1934..	159,400					3,531	86			4,438	22,188	37,778	17,930
1935..	413,700			200	7,038	12,905	404			5,115	25,575	146,506	94,921
1936..	605,500			1	35			1,100	245	5,399	26,995	317,014	143,059
1937..	876,540							1,500	335	11,371	56,855	135,442	60,788
1938..	1,045,458	75,567	7,535	6,800	239,190			1,500	335	22,855	68,565	581,902	252,993
1939..	1,121,553	42,382	4,277	51,914	1,876,224			1,500	335	20,191	50,477	483,874	195,911
1940..	410,176			55,159	2,123,621			1,500	335	18,633	37,265	59,505	22,760
1941..	925,196	32,727	3,301	74,417	2,865,054			1,500	335	23,664	47,328	15,327	5,864
1942..	(b)	74,963	7,561	99,394	3,826,669			1,500	335	75,789	108,477	22,531	9,500
1943..	(b)			59,032	2,272,732			1,500	335	293,750	400,201	13,250	5,996
1944..	(b)	11,902	1,428	20,775	799,838			1,500	335	1,223,675	632,587	13,677	5,881
1945..	(b)			8,655	333,218			1,500	335	345,171	136,303	2,033	956
1946..	(b)			23,420	860,685			1,500	335	177,282	173,392	6,112	5,113
Total	.....	237,511	24,102	399,767	15,204,304	16,436	490	.....	.....	2,232,851	1,818,496	.....	.....

(a) Includes recoveries from silver-pitchblende ores.
(*) See Yukon.
Production of tungsten concentrates totalled 41,972 pounds valued at \$13,220 in 1941; 98,218 pounds worth \$23,725 in 1942; and 720 pounds valued at \$729 in 1943.
(b) Not available for publication.

CANADA—DEPARTMENT OF TRADE AND COMMERCE
DOMINION BUREAU OF STATISTICS
MINING, METALLURGICAL AND CHEMICAL SECTION

MINERAL PRODUCTION

OF

CANADA

1946

DOMINION BUREAU OF STATISTICS

H. MARSHALL, Dominion Statistician

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ANNUAL REPORT

ON THE

MINERAL PRODUCTION OF CANADA

DURING THE CALENDAR YEAR 1946

Canada's mineral production during the first full post-war year, 1946, was valued at \$502,816,251, an increase of only 0.8 per cent from the \$498,755,181 valuation of the production in 1945. There was a decrease of 8.5 per cent in the total value of the metallic minerals which had declined to \$290,424,689 in 1946 as compared with \$317,093,719 in 1945. The fuels group, which includes coal, natural gas, peat and petroleum, exceeded the 100 million dollar mark for the first time. The recorded value of \$102,516,888 was 9.6 per cent higher than that of the preceding year.

Asbestos, gypsum, salt, barite and other non-metallic minerals showed an increase of 10.2 per cent to reach a total value of \$43,754,453. This, too, is a new high for this classification of minerals. A third record high was made by the structural materials, which include cement, lime, brick, tile, stone, sand and gravel. These industries reported a production valued at \$66,120,221 in 1946 as compared with \$48,419,673 in 1945.

The anticipated increase in available workmen failed to materialize, and as a result the metal production was on the decline. In July the Canadian dollar was placed on par value with the United States dollar. Gold which had previously been valued at \$38.50 per ounce in Canadian funds was reduced to \$35.00 per ounce. The labour scarcity, the reduction in price and the rising costs were, to put it mildly, deterrents in the development of the gold mining industry. The volume of copper, nickel and zinc was down and the total value was less than the preceding year despite the increase in price of exported base metals. The ceiling price of base metals for domestic consumption was maintained. The iron ore shipments continued to increase, due chiefly to the ability of Steep Rock Iron Mines Ltd. to mine large tonnages from its open pit deposit.

Activity in the Labrador and New Quebec iron ore area increased, but no production is expected from there for a few years. The tonnage and value of lead increased to 176,984 tons worth \$46,632,093. World shortage of this metal indicates an advance in price as the demand increases. The price of silver for 1946 averaged more than 83½ cents per ounce, thus increasing the value of total production by nearly 4½ million dollars. As silver is a by-product metal in Canada, it should not be used as a criterion in determining trends.

The Turner Valley field, which produces most of Canada's petroleum, reached its peak in 1942; since then there has been a continuous decline in volume, but the price per barrel has increased to yield an overall value higher in 1946 than in 1945. Coal produced in 1946 increased to 17,806,450 tons valued at \$75,361,481.

For many years Canada has been the world's leading producer of asbestos. In 1946 another record was broken when 558,181 tons of asbestos were shipped at a valuation of \$25,240,562. The gypsum industry in 1946 more than doubled its production of the previous year. The export demand for peat moss maintained this industry at a slightly higher level. Labour disputes in some of the chemical industries reduced the consumption of salt, thus the production of this commodity was lower in 1946 than in 1945. Comparative values were \$3,626,165 and \$4,054,720 respectively. The natural sodium sulphate recovered from the deposits in Saskatchewan were valued at \$1,117,683.

The construction program in Canada necessitated an acceleration in the production of structural materials. The shipments of cement exceeded 20 million dollars in value. Brick, tile and other clay products shipped in 1946 were worth \$12,207,367 as compared with \$8,913,092 in the previous year. Other building materials, which include lime, stone, sand and gravel, showed marked increases in production.

The mineral industry, which was affected by labour shortages, employed 99,196 persons in 1946, slightly more than the 96,250 persons recorded for 1945. Salaries and wages paid amounted to \$196,748,691. In addition to these employees just mentioned, there were 2,133 persons doing administrative and office work at head offices or at locations in Canada other than the mines or plants.

Table 1.—Quantities and Values of Mineral Products from Canadian Sources, 1945 and 1946

	1945		1946	
	Quantity	Value	Quantity	Value
		\$		\$
METALLICS				
Antimony.....lb.	1,667,951	290,557	642,145	96,322
Arsenic (As ₂ O ₃).....lb.	2,045,730	130,909	745,835	38,264
Bismuth.....lb.	189,815	260,047	240,504	336,706
Cadmium.....lb.	646,064	639,603	802,648	979,230
Calcium.....lb.	22,720	19,312	53,548	68,720
Chromite.....ton	5,755	180,752	3,110	61,123
Cobalt.....lb.	109,123	90,026	73,900	70,215
Copper.....lb.	474,914,052	59,322,261	367,936,875	46,632,093
Gold.....fine oz.	2,696,727	103,823,990	2,832,554	104,096,359
Iron ore.....ton	1,135,444	3,635,095	1,549,523	6,822,947
Lead.....lb.	346,994,472	17,349,723	353,973,776	23,893,230
Magnesium.....lb.	7,358,545	1,607,204	320,677	75,538
Mercury.....lb.				
Molybdenite concentrates.....lb.	978,117	411,663	736,400	295,640
Nickel.....lb.	245,130,983	61,982,193	192,124,537	45,385,155
Palladium, rhodium, iridium, etc.....fine oz.	458,674	18,671,074	117,566	5,162,801
Platinum.....fine oz.	208,234	8,017,010	121,771	7,672,791
Pitchblende products.....lb.		Not available		
Selenium.....lb.	379,187	728,039	521,867	949,798
Silver.....fine oz.	12,942,906	6,083,166	12,544,100	10,493,139
Tellurium.....lb.	484	929	15,848	24,405
Tin.....lb.	849,983	492,990	874,186	507,028
Titanium ore.....ton	14,147	67,575	1,406	7,735
Tungsten concentrates.....lb.	1,153	1,045		
Zinc.....lb.	517,213,604	33,308,556	470,620,360	36,755,450
Total Metallics.....		317,093,719		290,424,689
NON-METALLICS—FUELS				
Coal.....ton	16,506,713	67,588,402	17,806,450	75,361,481
Natural gas.....M cu. ft.	48,411,585	12,309,564	47,900,484	12,165,050
Peat.....ton	118	1,062	145	1,305
Petroleum.....bbl.	8,482,796	13,632,248	7,585,555	14,989,052
Total Fuels.....		93,531,276		102,516,588

Table 1.—Quantities and Values of Mineral Products from Canadian Sources, 1945 and 1946—Concluded

		1945		1946	
		Quantity	Value	Quantity	Value
			\$		\$
OTHER NON-METALLICS					
Asbestos.....	ton	466,897	22,805,157	558,181	25,240,562
Barytes.....	ton	139,589	1,211,403	120,419	1,066,473
Corundum.....	ton	1,317	130,393	742	102,340
Diatomite.....	ton	46	1,238	90	2,532
Feldspar.....	ton	30,246	282,656	35,243	384,677
Fluorspar.....	ton	7,369	233,708	8,042	237,491
Garnet schist.....	ton			2	1,200
Graphite.....	ton	1,910	179,001	1,975	180,405
Grindstones.....	ton	225	10,870	295	17,450
Gypsum.....	ton	839,781	1,783,290	1,810,937	3,671,503
Iron oxides.....	ton	10,314	172,053	12,695	152,268
Magnetite dolomite and brucite.....	ton		1,278,596		1,225,593
Mica.....	lb.	7,044,221	233,270	8,720,779	119,039
Mineral Waters.....	gal.	244,761	126,499	216,542	122,404
Nepheline syenite.....	ton	61,344	275,766	61,261	229,198
Peat Moss.....	ton	83,963	2,011,139	96,839	2,395,649
Phosphate rock.....	ton	299	4,356	57	869
Quartz.....	ton	1,513,628	1,535,458	1,413,378	1,554,798
Salt.....	ton	673,076	4,054,720	537,985	3,626,165
Silica brick.....	M	4,208	317,263	2,902	197,804
Soapstone (including some talc).....	ton	14,225	153,694	14,914	150,004
Sodium carbonate.....	ton	286	3,146		
Sodium sulphate.....	ton	93,068	884,322	105,919	1,117,683
Sulphur.....	ton	250,114	1,881,321	234,771	1,784,666
Talc.....	ton	12,863	141,194	14,439	153,680
Total Other Non-Metallics.....			39,710,513		43,754,453
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS					
Clay products (brick, tile, etc.).....			8,913,092		12,207,367
Cement.....	bbl.	8,471,679	14,246,480	11,560,483	20,122,503
Lime.....	ton	832,253	6,525,038	840,799	7,074,940
Sand and gravel.....	ton	29,750,703	10,568,363	39,949,994	15,529,700
Stone.....	ton	6,205,555	8,166,700	8,056,260	11,185,711
Total Clay Products and Other Structural Materials.....			48,419,673		66,120,221
Grand Total.....			498,755,181		502,816,251

Table 2.—Finally Revised Statistics on the Mineral Production of Canada, by Provinces, 1946

		Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskat- chewan	Alberta	British Columbia	Northwest Territories	Yukon	Canada
METALS												
Antimony.....	lb.								642,145			642,145
Arsenic.....	\$			420,654	325,231				96,322			96,322
Bismuth.....	lb.			21,580	16,684							745,885
Cadmium.....	lb.			6,484					224,020			38,264
				9,078					327,628			240,504
Cadmium.....	lb.					63,410	102,923		636,315			336,706
Calcium.....	lb.				53,548	77,360	125,566		776,304			802,648
Chromite.....	ton			3,110	68,720							979,230
	\$			61,123								53,548
Cobalt.....	lb.				73,900							68,720
	\$				70,215							3,110
Copper.....	lb.			69,797,697	179,424,639	38,501,047	62,712,654		17,500,538			61,123
	\$			8,934,105	22,502,528	4,928,134	8,027,258		2,240,068			73,900
Gold.....	oz.	4,321		1,813,339	1,793,402	79,402	112,101	110	136,232	23,420	45,286	367,936,875
	\$	158,797		22,723,958	66,639,988	2,918,024	4,119,712	4,042	5,006,893	890,685	1,664,260	46,632,093
Iron ore.....	ton				1,549,523							2,832,554
	\$				6,822,947							104,096,359
Lead.....	lb.			7,359,708	699,244				345,892,680		52,144	6,822,947
	\$			496,780	37,199				23,345,751		3,520	353,973,776
Magnesium.....	lb.				320,677							23,893,230
	\$				75,538							320,677
Molybdenite.....	lb.			736,400								75,538
Nickel.....	lb.			285,640								736,400
	\$				192,134,537							285,640
Palladium, rhodium, etc.....	oz.			45,355,185	117,566				192,134,537			45,355,185
	\$			5,162,801	5,162,801				45,355,155			5,162,801
Platinum.....	oz.				121,771							121,771
Pitchblende.....	\$				7,672,791		Not available					7,672,791
Selenium.....	lb.			110,768	270,606	46,118	94,275					521,867
	\$			201,508	402,503	83,095	171,762					949,798
Silver.....	oz.	146		1,016,453	2,435,215	598,097	1,493,496	12	6,078,410	6,112	31,230	12,543,190
	\$	122		1,603,113	2,078,832	441,688	1,255,492	10	5,094,567	5,113	20,124	10,493,199
Tellurium.....	lb.				14,200	340						14,200
	\$				21,868	537	2,000					21,868
Tin.....	lb.								874,186			874,186
	\$								507,028			507,028

[illegible]

Table 2.—Finally Revised Statistics on the Mineral Production of Canada, by Provinces, 1946—Concluded

	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskat- chewan	Alberta	British Columbia	Northwest Territories	Yukon	Canada
OTHER NON-METALLICS—Concluded											
Quartz.....ton	7,525		214,076	1,052,644		130,105		9,098			1,413,378
.....\$	15,550		612,128	832,713		47,542		26,865			1,534,798
Salt.....ton	38,371			441,679	26,166		31,769				537,985
.....M	329,579			2,408,279	446,472		441,835				3,624,165
Silica brick.....M	2,065			847							2,902
Soapstone (including some talc).....ton	119,272		14,914	78,532							197,804
.....\$			150,004								14,914
Sodium sulphate.....ton						105,919					150,004
.....\$						1,117,683					166,919
Sulphur.....ton			92,716	15,433				195,622			1,117,683
.....\$			875,328	154,330				1,255,008			234,771
Talc.....ton				14,439							1,784,666
.....\$				153,680							14,439
Total Other Non-metallics.....\$	3,266,194	623,314	28,812,853	5,240,648	939,644	1,165,225	441,835	3,264,740			43,754,453
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS											
Clay products (brick, tile etc.).....\$	671,466	336,971	3,457,168	4,288,780	372,920	411,446	1,808,971	859,645			12,207,367
Cement.....bol			5,046,166	3,677,695	1,254,946		809,721	771,955			11,560,483
.....\$			7,910,548	6,025,503	2,811,264		1,635,222	1,739,966			20,822,563
Lime.....ton		21,915	296,493	412,171	37,300		23,785	49,075			840,739
.....\$		286,401	2,304,826	3,316,231	392,304		204,926	570,252			7,074,340
Sand and gravel.....ton	1,105,980	2,203,646	12,374,125	14,881,918	1,333,890	1,732,731	1,812,468	4,505,236			39,849,991
.....\$	404,585	807,045	3,313,103	6,738,565	416,431	910,661	1,060,703	1,798,577			13,329,600
Stone.....ton	183,733	121,123	3,486,259	3,890,277	65,132		13,417	296,319			8,656,260
.....\$	515,453	386,984	5,630,265	3,923,972	242,470		55,286	431,281			11,153,711
Total Clay Products and Other Structural Materials.....\$	1,671,504	1,817,401	22,615,910	24,293,051	4,235,389	1,322,107	4,765,108	5,399,721			66,120,221
Grand Total—1946.....\$	35,350,271	4,813,166	92,785,148	191,544,429	16,403,549	24,480,900	60,052,513	74,622,846	1,039,525	1,693,904	502,816,251
Grand Total—1945.....\$	32,220,659	4,182,100	91,518,120	216,541,856	14,429,423	22,336,074	51,753,237	64,063,842	470,812	1,239,058	498,755,181
SUMMARY											
Metallics.....\$	158,919		41,356,385	157,061,148	11,228,516						290,424,689
Fuels.....\$	30,253,654	2,372,451		4,949,552		19,250,912	4,052	58,805,055	865,798	1,693,904	102,516,888
Other non-metallics.....\$	3,266,194	623,314	28,812,853	5,240,648	939,644	2,742,656	54,871,518	77,153,330	173,727		192,754,433
Clay products.....\$	671,466	336,971	3,457,168	4,288,780	372,920	1,165,225	1,441,835	3,264,740			12,207,367
Other structural materials.....\$	1,000,038	1,430,430	19,158,742	20,004,301	3,862,469	910,661	1,808,971	289,645			53,912,854
Grand Total—1946.....\$	35,350,271	4,813,166	92,785,148	191,544,429	16,403,549	24,480,900	60,052,513	74,622,846	1,039,525	1,693,904	502,816,251
Per cent of total.....	7.0	1.0	18.5	38.1	3.3	4.9	11.9	14.8	0.2	0.3	100.0

Table 3.—Production of Leading Mineral Products, by Months, 1945 and 1946

1945	Asbestos	Cement	Clay Products	Coal	Copper
	tons	barrels	\$	tons	pounds
January.....	31,653	171,662	438,003	1,691,066	44,098,887
February.....	37,760	194,002	427,903	1,604,759	39,649,050
March.....	50,443	380,911	587,761	1,469,398	45,638,927
April.....	43,310	614,682	614,626	1,321,063	42,680,662
May.....	41,757	761,627	731,543	1,201,274	40,903,706
June.....	39,465	1,039,113	792,324	1,277,840	44,097,021
July.....	37,553	1,157,852	831,472	1,092,203	42,119,787
August.....	41,054	1,046,418	874,109	1,199,078	39,228,972
September.....	38,910	1,005,830	890,015	1,187,429	34,797,140
October.....	35,666	1,101,474	1,022,786	1,217,034	34,953,070
November.....	36,593	692,661	971,977	1,790,504	32,035,764
December.....	32,733	305,447	730,573	1,555,065	34,711,066
Total.....	466,897	8,471,679	8,913,092	16,506,713	474,914,052

1945	Feldspar	Gold	Gypsum	Lead	Lime
	tons	fine oz.	tons	pounds	tons
January.....	1,205	237,210	12,936	25,426,948	62,713
February.....	1,921	215,993	12,901	24,389,248	60,420
March.....	2,321	232,610	18,508	34,899,827	70,031
April.....	2,011	227,575	24,776	27,955,975	70,759
May.....	2,161	221,288	43,759	25,359,183	70,213
June.....	3,628	215,802	103,749	24,982,494	69,928
July.....	2,198	213,815	82,479	25,309,517	68,305
August.....	3,090	215,386	99,012	27,911,967	66,407
September.....	2,654	215,157	132,380	28,951,516	65,982
October.....	2,342	233,487	150,756	32,572,398	72,597
November.....	3,645	224,542	110,025	34,873,826	86,524
December.....	3,070	243,862	50,500	34,361,573	68,369
Total.....	30,246	2,696,727	839,781	346,994,472	832,253

1945	Natural Gas	Nickel	Petroleum	Salt	Silver	Zinc
	M cu. ft.	pounds	barrels	tons	fine oz.	pounds
January.....	5,282,719	23,667,393	872,930	48,676	1,032,679	49,348,491
February.....	4,644,185	20,635,189	770,975	47,469	964,449	44,378,782
March.....	4,185,445	23,412,858	771,674	52,973	1,214,945	47,545,212
April.....	3,987,482	21,567,624	685,903	57,422	1,067,862	43,247,886
May.....	3,619,680	23,382,373	708,633	62,533	1,213,710	45,282,856
June.....	3,154,361	22,546,414	666,103	63,475	1,113,656	43,330,713
July.....	3,050,953	23,790,534	689,698	60,526	963,561	45,053,498
August.....	3,059,726	21,896,415	678,123	59,654	1,069,038	41,388,606
September.....	3,378,445	16,434,819	650,612	56,966	975,250	38,336,609
October.....	3,963,196	17,170,277	675,918	54,475	1,049,562	38,736,083
November.....	4,841,314	15,416,996	652,081	56,079	1,110,380	40,480,003
December.....	5,244,079	15,210,091	660,146	52,828	1,167,814	40,085,365
Total.....	48,411,585	245,130,983	8,482,796	673,076	12,942,906	517,213,604

1946	Asbestos	Cement	Clay Products	Coal	Copper
	tons	barrels	\$	tons	pounds
January.....	36,576	310,353	790,326	1,808,184	31,468,143
February.....	29,666	273,207	692,637	1,640,678	27,119,084
March.....	36,369	603,432	806,743	1,588,634	31,899,808
April.....	47,685	1,001,744	865,765	1,360,237	31,449,422
May.....	52,927	1,535,007	1,041,655	1,396,188	30,567,959
June.....	47,437	1,458,684	1,054,141	1,259,394	29,983,686
July.....	45,814	1,351,522	1,260,760	1,154,772	30,583,060
August.....	53,783	1,230,373	1,218,617	1,391,464	29,536,366
September.....	51,182	1,143,166	1,147,656	1,428,263	28,450,698
October.....	55,769	1,191,055	1,270,454	1,625,346	30,092,716
November.....	52,400	930,264	1,163,406	1,579,710	34,942,710
December.....	48,573	531,676	895,207	1,573,580	31,843,223
Total.....	558,181	11,560,483	12,207,367	17,806,450	367,936,875

Table 3.—Production of Leading Mineral Products, by Months, 1945 and 1946
—Concluded

1946	Feldspar	Gold	Gypsum	Lead	Lime
	tons	fine oz.	tons	pounds	tons
January.....	1,932	147,585	18,898	33,737,548	72,044
February.....	2,234	138,828	21,942	30,180,511	64,844
March.....	2,098	150,438	54,446	30,983,044	72,818
April.....	2,572	144,664	110,311	30,563,605	72,248
May.....	2,780	151,797	142,589	29,757,570	75,793
June.....	3,534	152,018	150,195	30,626,614	74,400
July.....	2,535	155,362	201,414	31,351,404	63,539
August.....	3,176	152,709	243,279	29,801,469	61,047
September.....	3,230	150,383	248,143	28,759,323	58,049
October.....	2,841	156,282	270,937	29,455,735	74,245
November.....	3,633	156,057	242,123	22,458,713	76,767
December.....	4,678	157,210	106,660	26,298,240	75,005
Total.....	35,243	1,813,333	1,810,937	353,973,776	840,799

1946	Natural Gas	Nickel	Petroleum	Salt	Silver	Zinc
	M cu. ft.	pounds	barrels	tons	fine oz.	pounds
January.....	5,164,209	14,002,307	678,418	53,890	1,172,602	41,398,931
February.....	4,790,054	12,611,580	608,580	50,313	1,013,668	39,464,884
March.....	4,236,895	15,880,314	661,675	56,576	1,028,797	42,612,319
April.....	3,700,580	18,719,206	642,626	59,766	1,135,744	41,260,879
May.....	3,494,275	14,924,792	648,065	62,651	1,011,263	40,576,485
June.....	3,151,566	15,385,761	620,188	59,458	1,142,305	38,946,545
July.....	2,915,218	16,451,200	632,914	30,477	1,233,310	39,233,386
August.....	2,994,858	15,637,241	621,538	17,068	1,155,447	38,848,356
September.....	3,258,015	16,167,710	623,200	20,229	929,005	38,254,560
October.....	3,996,106	17,441,984	637,428	27,403	906,467	36,535,523
November.....	4,846,530	17,694,162	618,093	43,964	820,218	36,714,909
December.....	5,352,178	17,208,280	592,830	56,190	995,274	36,773,583
Total.....	47,900,484	192,124,537	7,585,555	537,985	12,544,100	470,620,360

Table 4.—Values of the entire Mineral Production of Canada, by Provinces, since 1932

Year	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba
	\$	\$	\$	\$	\$
1932.....	16,201,279	2,223,505	25,638,466	85,910,030	9,058,365
1933.....	16,966,183	2,107,682	28,141,482	110,205,021	9,026,951
1934.....	23,310,729	2,156,151	31,269,945	145,565,871	9,776,934
1935.....	23,183,128	2,821,027	39,124,696	158,934,269	12,052,417
1936.....	26,672,278	2,587,791	49,736,919	184,532,892	11,315,527
1937.....	30,314,188	2,763,643	65,160,215	230,042,517	15,751,645
1938.....	26,253,645	3,802,565	68,965,594	219,801,994	17,173,002
1939.....	30,746,200	3,949,433	77,335,998	232,519,948	17,137,930
1940.....	33,318,587	3,435,916	86,313,491	261,483,349	17,828,522
1941.....	32,569,867	3,690,375	99,651,044	267,435,727	16,689,867
1942.....	32,783,165	3,690,158	104,300,010	259,114,946	14,345,046
1943.....	29,979,837	3,676,834	101,610,678	232,948,959	13,412,266
1944.....	33,981,977	4,133,902	90,182,553	210,706,307	13,830,406
1945.....	32,220,659	4,182,100	91,518,120	216,541,856	14,429,423
1946.....	35,350,271	4,813,166	92,785,148	191,544,429	16,403,549

Table 4.—Values of the entire Mineral Production of Canada, by Provinces, since 1932
—Concluded

Year	Saskatchewan	Alberta	British Columbia	Yukon	Northwest Territories*
	\$	\$	\$	\$	\$
1932.....	1,681,728	21,174,061	27,326,173	1,993,195	21,423
1933.....	2,477,425	19,702,953	30,794,504	2,041,223	279,729
1934.....	2,977,061	20,228,851	41,206,965	1,628,879	199,604
1935.....	3,816,943	22,289,681	48,692,050	1,302,308	541,638
1936.....	6,970,397	23,305,726	54,407,036	2,220,372	775,834
1937.....	10,271,463	25,597,117	73,555,798	3,784,528	994,518
1938.....	7,782,847	28,966,272	64,549,130	3,959,570	1,614,076
1939.....	8,794,090	30,691,617	65,216,745	4,961,321	3,248,777
1940.....	11,505,858	35,092,337	74,134,485	4,118,333	2,594,157
1941.....	15,020,555	41,364,385	76,841,180	3,117,992	3,860,298
1942.....	20,578,749	47,359,831	77,247,932	3,453,568	3,976,267
1943.....	26,735,984	48,941,210	68,442,386	1,625,819	2,679,993
1944.....	22,291,848	51,066,662	57,246,071	939,319	1,440,069
1945.....	22,336,074	51,753,237	64,063,842	1,239,058	470,812
1946.....	24,480,900	60,082,513	74,622,846	1,693,904	1,039,525

* Values of pitchblende products not included since 1941.

Table 5.—Mineral Production of Nova Scotia, 1944-1946

Product	1944		1945		1946	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS—						
Gold.....fine oz.	5,840	224,840	3,291	126,704	4,321	158,797
Lead.....pound						
Silver.....fine oz.	188	81	112	53	146	122
NON-METALLICS—						
Barite.....tons	106,106	970,774	108,434	1,165,623	117,691	987,473
Coal.....tons	5,745,671	30,728,535	5,112,615	28,350,278	5,452,898	30,253,654
Diatomite.....tons	5	175	24	740	49	1,505
Fluorspar.....tons						
Grindstones.....tons			10	600		
Gypsum.....tons	401,284	489,932	634,960	790,273	1,538,738	1,812,815
Quartz.....tons	10,100	27,350	10,734	36,171	7,525	15,550
Salt.....tons	38,809	281,482	37,825	254,138	38,371	329,579
Silica brick.....M	2,931	177,003	3,040	185,865	2,055	119,272
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—						
Clay products.....		402,694		433,455		671,466
Lime—						
Quicklime.....tons	3,362	42,957	469	5,771		
Hydrated lime.....tons						
Sand and gravel.....tons	911,970	411,041	1,308,848	555,809	1,105,980	484,585
Stone.....tons	98,433	225,113	123,434	315,179	183,733	515,453
Total.....		33,981,977		32,220,659		35,350,271

Table 6.—Mineral Production of New Brunswick, 1944-1946

Product	1944		1945		1946	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS—						
Iron ore.....tons						
Manganese ore.....tons						
NON-METALLICS—						
Coal.....tons	345,123	1,845,277	361,184	2,021,806	366,735	2,069,992
Grindstones.....tons	225	12,000	215	10,270	295	17,450
Gypsum.....tons	42,040	200,748	46,755	236,833	38,839	550,972
Natural gas.....M cu. ft.	702,464	341,636	653,230	317,568	541,010	262,441
Petroleum.....bbl.	23,296	32,832	30,140	42,413	28,584	40,018
Peat Moss.....tons	2,000	64,000	2,000	64,000	2,247	54,892
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—						
Clay products.....		207,051		232,783		336,971
Lime—						
Quicklime.....tons	17,218	195,545	17,517	209,654	18,569	242,943
Hydrated lime.....tons	2,580	32,102	2,424	31,997	3,346	43,458
Sand and gravel.....tons	1,960,382	958,524	1,627,371	686,267	2,203,646	807,045
Stone.....tons	69,988	244,187	99,328	328,509	121,123	386,984
Total.....		4,133,902		4,182,100		4,813,166

Table 7.—Mineral Production of Quebec*, 1944-1946

Product	1944		1945		1946	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS—						
Arsenic (As ₂ O ₃).....lb.	2,268,067	153,944	1,821,263	118,557	420,654	21,580
Bismuth.....lb.					6,484	9,078
Chromite.....tons	27,054	748,494	5,755	160,752	3,110	61,123
Copper.....lb.	108,055,172	12,966,620	102,685,069	12,888,976	69,797,607	8,934,105
Gold.....fine oz.	746,784	28,751,184	661,608	25,471,908	618,339	22,723,958
Lead.....lb.	10,487,842	471,953	9,229,726	461,486	7,359,708	496,780
Magnesium.....lb.						
Molybdenite concentrates.....lb.	2,124,693	1,078,616	978,117	411,663	736,400	295,640
Selenium.....lb.	146,352	263,434	160,720	308,683	110,768	201,593
Silver.....fine oz.	2,500,681	1,075,293	2,149,570	1,010,298	1,916,453	1,603,113
Tellurium.....lb.						
Titanium ore.....tons	33,973	165,195	14,147	67,575	1,406	7,735
Tungsten concentrates.....lb.						
Zinc.....lb.	137,378,439	5,907,273	111,909,565	7,206,976	89,650,129	7,001,675
NON-METALLICS—						
Asbestos.....tons	419,265	20,619,516	466,894	22,802,511	558,181	25,240,283
Feldspar.....tons	17,842	177,271	26,389	247,242	29,758	330,981
Fluorspar.....tons	18	670				
Iron oxides (ochre).....tons	8,117	142,050	9,917	170,068	12,268	146,401
Magnesitic dolomite and brucite.....		1,139,281		1,278,596		1,225,593
Mica.....tons	1,137	178,899	1,428	121,011	1,199	108,667
Natural mineral waters.....Imp. gal.	148,965	78,226	236,476	125,523	211,842	121,526
Peat fuel.....tons	444	3,597				
Peat moss.....tons	19,033	359,724	18,517	387,499	26,382	501,073
Phosphate.....tons	482	6,716	291	4,236	57	869
Quartz.....tons	236,091	639,429	195,857	626,079	214,076	612,128
Soapstone and talc.....tons	19,013	204,127	14,225	153,694	14,914	150,004
Sulphur.....tons	116,887	453,501	105,613	445,534	92,716	375,328
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—						
Cement.....bbl.	3,249,302	4,736,004	3,872,373	5,985,077	5,046,166	7,910,548
Clay products.....		1,881,791		2,534,630		3,457,168
Lime—						
Quicklime.....tons	250,616	2,167,913	244,490	1,911,566	209,573	1,874,251
Hydrated lime.....tons	88,466	336,165	66,567	284,271	86,920	430,575
Sand and gravel.....tons	8,541,400	2,140,856	8,971,960	2,279,537	12,374,125	3,313,103
Stone.....tons	2,593,842	3,334,811	2,670,161	4,056,272	3,486,259	5,630,265
Total.....		90,182,553		91,518,120		92,785,148

* There is also in this province an important production of aluminum from imported ores.

Table 8.—Mineral Production of Ontario, 1944-1946

Product	1944		1945		1946	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS—						
Arsenic (As ₂ O ₃).....lb.	358,955	26,922	224,467	12,352	325,231	16,684
Calcium.....lb.			22,720	19,312	53,548	68,720
Cobalt (a).....lb.	36,283	34,106	109,123	90,026	73,900	70,215
Copper.....lb.	285,307,278	33,845,632	239,450,875	29,771,633	179,424,639	22,502,528
Gold.....fine oz.	1,731,836	66,675,686	1,625,368	62,576,668	1,813,333	66,639,988
Iron ore.....short tons	553,252	1,909,608	1,135,444	3,635,095	1,549,523	6,822,947
Lead.....lb.	1,065,741	47,958	668,762	33,438	699,244	47,199
Magnesium.....lb.	10,579,878	2,575,695	7,358,545	1,607,264	320,677	75,538
Molybdenite (concentrates).....lb.	2,815	1,082				
Nickel.....lb.	274,598,629	69,204,152	245,130,983	61,982,133	192,124,537	45,385,155
Palladium, rhodium, etc., fine oz.	42,929	1,960,085	458,674	18,671,074	117,566	5,162,801
Platinum.....fine oz.	157,523	6,064,635	208,234	8,017,010	121,771	7,672,791
Selenium.....lb.	65,000	117,000	168,000	322,560	270,606	492,503
Silver.....fine oz.	3,143,275	1,351,608	3,185,369	1,497,123	2,485,215	2,078,882
Tellurium.....lb.	9,900	17,325			14,200	21,868
Tungsten concentrates.....lb.	63,162	5,212	787	714		
Zinc.....lb.	2,429,176	104,455	237,799	15,314	42,628	3,329
NON-METALLICS—						
Asbestos.....tons			3	2,646		279
Barite.....tons						
Corundum.....tons	173	17,111	1,317	130,393	742	102,340
Feldspar.....tons	5,667	50,361	3,857	35,414	5,485	53,696
Fluorspar.....tons	6,906	217,031	7,369	233,708	8,042	237,491
Garnet (schist).....tons	3	90			2	1,200
Graphite.....tons	1,582	171,166	1,910	179,001	1,975	180,405
Gypsum.....tons	90,288	348,873	92,174	385,516	122,524	492,179
Mica.....tons	1,743	646,745	1,452	95,123	2,353	66,952
Natural mineral waters Imp. gal.	7,185	805	8,285	976	6,000	878
Natural gas.....M cu. ft.	7,082,508	4,694,097	7,199,970	4,837,586	7,051,309	4,656,528
Nepheline syenite.....tons	47,625	217,989	61,345	275,766	61,261	229,198
Peat (fuel).....tons	200	1,800	118	1,062	145	1,305
Peat (moss).....tons	12,490	144,820	11,667	224,100	17,176	228,496
Petroleum.....bbl.	125,067	296,420	113,325	268,478	123,082	291,719
Phosphate.....tons			8	120		
Quartz (b).....tons	1,326,288	868,389	1,165,238	820,664	1,052,644	852,713
Salt.....tons	603,806	2,906,117	578,697	2,920,973	441,679	2,408,279
Silica brick.....M	1,066	135,089	1,168	131,398	847	78,532
Sulphur.....tons	17,876	178,760	16,847	168,470	15,433	154,330
Talc.....tons	13,584	153,122	12,863	141,194	14,439	153,680
CLAY PRODUCTS AND OTHER						
STRUCTURAL MATERIALS—						
Cement.....bbl.	1,863,210	2,730,381	2,460,996	3,805,131	3,677,695	6,025,503
Clay Products.....bbl.		2,347,396		3,107,189		4,288,780
Lime—						
Quicklime.....tons	391,678	2,886,778	360,597	2,682,658	362,898	2,712,150
Hydrated lime.....tons	37,607	424,399	38,050	449,018	49,273	604,081
Sand and gravel.....tons	9,529,803	4,417,427	10,466,891	4,466,862	14,881,918	6,738,595
Stone.....tons	2,988,283	2,909,980	2,952,357	2,926,694	3,890,277	3,923,972
Total		210,706,307		216,541,856		191,544,429

† Sulphur content of pyrites shipped and estimated sulphur salvaged from smelter gases.

(a) Exclusive of metal in ore placed on Government stock pile at Deloro, Ontario, but includes any metal reshipped from stock pile.

(b) Includes low grade silica sand for fluxing purposes.

Table 9.—Mineral Production of Manitoba, 1944-1946

Product	1944		1945		1946	
	Quantity	Value	Quantity	Value	Quantity	Value
METALLICS—		\$		\$		\$
Cadmium.....lb.	20,921	23,013	27,891	27,612	63,410	77,360
Copper.....lb.	43,878,639	5,265,437	41,126,155	5,161,332	38,501,047	4,928,134
Gold.....fine oz.	74,168	2,855,468	70,655	2,720,218	79,402	2,918,024
Selenium.....lb.	12,957	23,323	9,258	17,775	46,118	83,935
Silver.....fine oz.	569,873	245,045	533,883	250,925	528,017	441,686
Tellurium.....lb.	113	198	89	171	349	537
Thallium.....lb.	128	1,690				
Zinc.....lb.	45,822,278	1,970,353	34,860,754	2,245,033	35,580,537	2,778,840
NON-METALLICS—						
Coal.....tons						
Gypsum.....tons	38,330	368,498	42,275	300,636	63,187	428,133
Lithium minerals.....\$						
Peat moss.....tons	1,128	41,878	1,181	43,243	1,772	65,039
Salt.....tons	27,267	488,776	27,133	449,561	26,166	446,472
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—						
Cement.....bbl.	865,756	1,698,567	959,398	2,027,629	1,254,946	2,811,264
Clay products.....		197,383		269,917		372,920
Lime.....tons	20,428	178,876	23,080	200,808	27,178	242,506
Quicklime.....tons	9,466	122,256	8,415	112,385	10,182	149,798
Sand and gravel.....tons	1,102,448	296,088	1,497,062	516,380	1,333,890	416,431
Stone.....tons	31,929	53,554	62,626	85,798	65,132	242,470
Total.....		13,830,406		14,429,423		16,403,549

Table 10.—Mineral Production of Saskatchewan, 1944-1946

Product	1944		1945		1946	
	Quantity	Value	Quantity	Value	Quantity	Value
METALLICS—		\$		\$		\$
Cadmium.....lb.	119,639	131,603	107,741	106,663	102,925	125,566
Copper.....lb.	73,514,499	8,821,740	65,900,701	8,270,538	62,712,954	8,027,258
Gold.....fine oz.	122,782	4,727,107	108,568	4,179,868	112,101	4,119,712
Selenium.....lb.	74,283	133,709	41,209	79,121	94,375	171,762
Silver.....fine oz.	1,735,773	746,382	1,426,457	670,435	1,498,496	1,253,492
Tellurium.....lb.	648	1,134	395	758	1,299	2,000
Zinc.....lb.	87,130,087	3,746,594	75,413,851	4,856,652	71,077,110	5,551,122
NON-METALLICS—						
Coal.....tons	1,372,766	2,034,914	1,532,995	2,327,082	1,523,786	2,544,926
Quartz (a).....tons	143,101	50,085	141,799	52,544	130,105	47,542
Salt.....tons						
Sodium sulphate.....tons	102,421	987,842	93,068	884,322	105,919	1,117,683
Natural gas.....M cu. ft.	119,116	46,656	163,824	58,165	209,569	61,740
Petroleum crude.....bbl.			14,374	15,362	118,686	135,990
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—						
Clay products.....tons		330,907		271,288		411,446
Sand and gravel.....tons	1,163,097	533,175	1,237,595	563,276	1,732,731	910,661
Total.....		22,291,848		22,336,074		24,480,900

(a) Low grade silica sand for fluxing purposes.

Table 11.—Mineral Production of Alberta, 1944-1946

Product	1944		1945		1946	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS—						
Gold..... fine oz.	51	1,963	7	269	110	4,042
Silver..... fine oz.	4	2	1	.....	12	10
NON-METALLICS—						
Bituminous sands..... tons	(a)	(a)	(a)	(a)	(a)	(a)
Coal..... tons	7,428,708	26,814,937	7,800,151	27,751,377	8,826,239	33,339,579
Natural gas..... M cu. ft.	37,161,570	6,339,817	40,393,061	7,095,910	40,097,096	7,194,006
Peat moss..... tons	.....	.....	.....	.....	.....	.....
Petroleum..... bbl.	8,727,366	14,468,061	7,979,786	13,169,692	7,137,921	14,347,933
Salt..... tons	25,335	397,646	29,421	430,048	31,769	441,835
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—						
Cement..... bbl.	699,989	1,370,502	620,337	1,246,346	809,721	1,635,222
Clay products.....	.....	1,143,577	.....	1,401,875	.....	1,808,971
Lime—						
Quicklime..... tons	18,102	151,457	19,240	163,172	21,962	186,696
Hydrated lime..... tons	750	7,500	615	6,150	1,823	18,230
Sand and gravel..... tons	833,524	328,151	919,736	433,436	1,812,468	1,060,703
Stone..... tons	12,726	43,049	13,528	54,962	13,417	55,286
Total.....		51,066,662		51,753,237		60,082,513

(a) Included with petroleum refining; no crude sands sold.

Table 12.—Mineral Production of British Columbia, 1944-1946

Product	1944		1945		1946	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS—						
Antimony..... lb.	1,937,933	281,000	1,667,951	290,557	642,145	96,322
Arsenic (As ₂ O ₃)..... lb.	(a)	(a)	(a)	(a)	(a)	(a)
Bismuth..... lb.	123,875	154,844	189,815	260,047	234,020	327,628
Cadmium..... lb.	386,410	425,051	510,432	505,328	636,315	776,304
Copper..... lb.	36,302,628	4,356,315	25,751,252	3,231,782	17,500,538	2,240,068
Gold..... fine oz.	196,857	7,578,994	186,854	7,193,879	136,242	5,006,893
Lead..... lb.	292,922,888	13,181,530	336,976,468	16,848,823	345,862,680	23,345,731
Mercury..... lb.	735,908	1,210,375	.....	.....	.....	.....
Platinum..... fine oz.	.....	.....	.....	.....	.....	.....
Silver..... fine oz.	5,631,572	2,421,576	5,620,323	2,641,552	6,078,419	5,084,597
Tin..... lb.	516,626	299,643	849,983	492,990	874,186	507,028
Tungsten concentrates..... lb.	818,000	236,788	366	331	.....	.....
Zinc..... lb.	278,063,373	11,956,725	294,791,635	18,984,581	274,269,956	21,420,484
NON-METALLICS—						
Barite..... tons	12,613	52,922	31,155	45,780	2,728	19,000
Coal..... tons	2,134,231	9,009,506	1,699,768	7,137,859	1,636,792	7,153,330
Diatomite..... tons	8	262	22	498	41	1,027
Gypsum..... tons	24,222	103,927	23,617	70,032	47,649	387,404
Iron oxides (ochre)..... tons	482	8,200	397	1,985	427	5,867
Mica (schist)..... tons	462	15,382	642	17,136	803	23,420
Peat moss..... tons	45,794	1,259,181	50,597	1,292,297	49,263	1,546,149
Quartz..... tons	24,682	73,156	.....	.....	9,028	26,865
Sodium carbonate..... tons	44	484	286	3,146	.....	.....
Sulphur*..... tons	113,325	1,123,478	127,654	1,267,317	126,622	1,255,008
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—						
Cement..... bbl.	512,594	1,085,918	558,575	1,182,297	771,955	1,739,966
Clay Products.....	.....	486,626	.....	661,955	.....	859,645
Lime—						
Quicklime..... tons	36,798	324,553	42,780	406,239	44,494	519,697
Hydrated lime..... tons	8,071	56,343	8,009	61,349	4,581	50,555
Sand and gravel..... tons	4,357,362	1,194,859	3,721,240	1,066,796	4,505,236	1,798,577
Stone..... tons	199,791	348,483	284,121	399,286	296,319	431,281
Total.....		57,216,071		64,063,842		74,622,846

* Includes sulphur content of pyrites shipped and estimated sulphur contained in sulphuric acid and other products made from waste smelter gases.

(a) Considerable arsenic is contained in auriferous quartz ores exported. However this is not paid for and data relating to its possible recovery are unobtainable.

Table 13.—Mineral Production of Yukon and the North West Territories, 1944-1946

Produce	1944		1945		1946	
	Quantity	Value	Quantity	Value	Quantity	Value
YUKON		\$		\$		\$
METALLICS—						
Antimony.....lb.						
Gold.....fine oz.	23,818	916,993	31,721	1,221,258	45,285	1,664,260
Lead.....lb.	105,727	4,758	119,516	5,976	52,144	3,520
Silver.....fine oz.	32,066	13,788	25,158	11,824	31,230	26,124
Tungsten concentrates.....lb.	5,593	3,780				
NON-METALLIC—						
Coal.....tons						
Total.....		939,319		1,239,058		1,693,904
NORTH WEST TERRITORIES						
Copper.....lb.	11,902	1,428				
Gold.....fine oz.	20,775	799,838	8,655	333,218	23,420	860,685
Pitchblende products.....(a)		(a)	(a)	(a)	(a)	(a)
Silver-cobalt ores.....M cu. ft.	1,500	335	1,500	335	1,500	335
Silver.....fine oz.	13,677	5,881	2,033	956	6,112	5,113
Petroleum, crude.....bbl.	1,223,675	632,587	345,171	136,303	177,232	173,392
Tungsten concentrates.....lb.						
Total.....		1,440,069		470,812		1,039,525

(a) Data not available for publication.

Table 14.—Tonnage of Ore Mined and Rock Quarried in the Canadian Mining Industry, 1922-1946

	1946	1945	1944	1943	1942
Gold quartz ores.....	10,712,615	9,780,555	10,790,495	12,853,610	17,722,866
Copper-gold-silver ores.....	5,009,490	5,914,580	7,395,608	8,251,579	8,575,526
Nickel-copper ores.....	8,224,751	10,854,735	12,954,201	12,925,590	12,081,545
Silver-cobalt ores.....	32,841	30,519	27,184	39,184	25,550
Silver-lead-zinc ores.....	2,805,658	3,086,683	2,911,824	3,252,657	2,951,480
Miscellaneous metals (iron ore etc.).....	2,131,691	1,605,514	1,250,800	1,359,008	1,120,478
Asbestos.....	9,127,859	8,765,370	7,778,805	7,929,471	8,233,516
Feldspar and nepheline syenite.....	71,214	91,535	84,089	90,416	77,049
Quartz, exclusive of sand (shipments).....	879,310	807,002	988,758	947,195	487,664
Gypsum and anhydrite.....	2,027,045	830,723	536,356	430,822	794,886
Talc and soapstone.....	28,624	26,599	30,553	22,128	30,376
Iron oxides.....	8,823	8,189	15,519	12,648	15,629
Other non-metals.....	589,036	614,286	536,957	529,326	457,251
Stone, all kinds, quarries (exclusive of stone used for cement and lime).....	8,056,260	6,205,555	5,994,992	7,222,950	7,978,066
Stone used for the manufacture of cement.....	2,525,653	1,919,858	1,939,900	1,994,202	2,155,750
Estimate rock for the manufacture of lime.....	1,445,891	1,482,077	1,571,451	1,614,481	1,574,508
Total (other than coal).....	53,676,761	52,023,780	54,807,492	59,475,267	64,282,240
	1941	1940	1939	1938	1937
Gold quartz ores.....	20,031,736	18,986,306	17,105,744	14,749,649	12,388,489
Copper-gold-silver ores.....	9,263,071	8,931,291	8,474,855	7,929,434	6,749,809
Nickel-copper ores.....	9,974,272	8,361,532	7,859,496	6,282,799	6,322,062
Silver-cobalt ores.....	11,507	43,245	60,431	59,408	56,878
Silver-lead-zinc ores.....	2,816,974	2,640,973	2,195,138	2,387,167	2,524,548
Miscellaneous metals.....	883,851	306,056	191,654	1,307	17,509
Asbestos.....	7,707,367	7,612,150	6,650,416	5,816,368	6,477,805
Feldspar and nepheline syenite.....	57,861	101,645	79,346	50,768	53,901
Quartz.....	335,085	228,065	273,839	450,246	450,740
Gypsum.....	1,532,228	1,465,820	1,532,423	1,084,057	1,151,064
Talc and soapstone.....	38,067	20,514	14,111	10,366	7,271
Iron oxides.....	15,917	15,623	10,049	8,919	7,665
Other non-metals.....	412,159	306,765	216,253	179,932	243,670
Stone, all kinds, quarries (exclusive of stone used for cement and lime).....	7,940,801	7,447,665	5,443,522	5,116,022	6,935,612
Stone used for the manufacture of cement (estimated from 1922-1929).....	2,086,781	1,765,944	1,379,858	1,344,868	1,465,168
Estimate rock for the manufacture of lime.....	1,530,200	1,280,949	900,000	867,583	976,900
Total.....	64,637,877	59,515,543	52,387,135	46,338,893	45,829,091

Table 14.—Tonnage of Ore Mined and Rock Quarried in the Canadian Mining Industry, 1922-1946—Concluded

	1936	1935	1934	1933	1932
Gold-quartz ores.....	10,694,208	8,832,901	7,846,854	6,528,854	6,072,665
Copper-gold-silver ores.....	5,052,222	5,650,665	6,065,692	5,448,690	5,453,173
Nickel-copper ores.....	4,666,554	3,699,845	2,989,988	1,533,887	826,041
Silver-cobalt ores.....	59,592	57,287	54,498	60,317	70,442
Silver-lead-zinc ores.....	2,196,482	2,134,749	1,856,256	1,457,452	1,532,628
Miscellaneous metals.....	9,440	4,970	3,618	3,000	77
Asbestos.....	4,692,004	2,852,118	2,320,750	1,566,919	1,145,340
Feldspar and nepheline syenite.....	20,703	15,706	18,302	10,658	4,903
Quartz.....	249,960	226,857	272,563	185,783	207,031
Gypsum.....	841,116	562,471	488,066	370,591	437,153
Talc and soapstone.....	25,052	13,909	15,050	16,626	13,275
Iron oxides.....	7,223	6,152	6,182	4,379	14,262
Other non-metals.....	231,849	128,415	173,669	129,514	52,154
Stone, all kinds, quarries (exclusive of stone used for cement and lime).....	4,982,912	4,317,947	4,077,754	2,939,824	4,691,172
Stone used for the manufacture of cement (estimated from 1922-1929).....	1,180,358	818,443	806,546	616,364	1,141,376
Estimate rock for the manufacture of lime.....	800,000	700,000	600,000	573,726	569,500
Total.....	35,709,675	30,022,435	27,595,788	21,446,584	22,231,192
	1931	1930	1929	1928	1927
Gold quartz ores.....	5,565,426	4,472,803	4,354,744	4,601,628	4,605,190
Copper-gold-silver ores.....	6,002,865	5,768,664	5,134,824	4,262,822	3,636,759
Nickel-copper ores.....	1,714,075	2,127,043	1,991,910	1,457,910	1,305,917
Silver-cobalt ores.....	200,729	223,432	242,591	260,644	303,134
Silver-lead-zinc ores.....	1,710,732	2,244,970	2,208,270	2,097,179	1,763,660
Miscellaneous metals.....	1,608				
Asbestos.....	2,274,048	4,901,206	6,208,970	5,171,060	4,834,761
Feldspar and nepheline syenite.....	13,897	26,796	37,527	31,897	31,484
Quartz.....	180,110	226,200	265,949	290,721	245,318
Gypsum.....	882,880	1,070,968	1,211,689	1,311,642	1,105,704
Talc and soapstone.....	21,916	11,841		17,076	16,521
Iron oxides.....	12,465	6,596		10,841	7,767
Other non-metals.....	120,205				
Stone, all kinds, quarries (exclusive of stone used for cement and lime).....	8,398,110	9,994,656	9,622,424	8,253,804	7,306,436
Stone used for the manufacture of cement (estimated from 1922-1929).....	2,489,147	2,925,399	3,000,000	2,800,000	2,400,000
Estimate rock for the manufacture of lime.....	610,000	874,000	1,203,000	905,000	790,000
Total.....	30,198,213	4,874,574	35,481,895	31,472,224	28,352,651
	1926	1925	1924	1923	1922
Gold quartz ores.....	4,031,035	3,646,460	3,096,290	2,478,912	2,431,340
Copper-gold-silver ores.....	3,210,321	2,518,849	2,232,085	1,690,073	1,004,097
Nickel-copper ores.....	1,322,050	1,264,748	1,411,978	1,187,355	259,569
Silver-cobalt ores.....	336,066	357,029	433,176	437,222	426,445
Silver-lead-zinc ores.....	1,565,153	1,474,764	1,200,039	636,498	505,774
Miscellaneous metals.....					
Asbestos.....	4,002,626	4,120,214	3,323,505	3,768,542	2,562,933
Feldspar and nepheline syenite.....	35,951		44,804		
Quartz.....	238,343	197,224	150,896	272,070	125,245
Gypsum.....	931,193	705,852	703,733	558,853	484,629
Talc and soapstone.....	16,650	15,390	11,240	10,235	
Iron oxides.....	6,626	13,225			
Other non-metals.....					
Stone, all kinds, quarries (exclusive of stone used for cement and lime).....	6,397,590	5,706,119	4,768,014	4,111,334	3,639,081
Stone used for the manufacture of cement (estimated from 1922-1929).....	2,200,000	1,900,000	1,900,000	1,900,000	1,600,000
Estimate rock for the manufacture of lime.....	715,700	637,000	570,000	625,000	561,000
Total.....	25,009,309	22,556,874	19,845,760	17,676,094	13,600,113

YEARLY AVERAGE PRICES OF COPPER, LEAD, ZINC AND SILVER

Table 15.—(Copper, lead and zinc in U.S. cents per pound; silver, U.S. cents per ounce)
(From the American Bureau of Metal Statistics)

Year	Copper New York (b)	Lead New York	Zinc (a)	Silver New York	Year	Copper New York (b)	Lead New York	Zinc (a)	Silver New York
	Yearly average	Yearly average	Yearly average	Yearly average		Yearly average	Yearly average	Yearly average	Yearly average (c)
1889.....	13-750	3-930	5-023	93-600	1918.....	24-628	7-413	7-890	96-775
1890.....	15-750	4-480	5-550	104-600	1919.....	18-691	5-759	6-988	111-127
1891.....	12-625	4-350	5-020	98-800	1920.....	17-456	7-957	7-671	100-902
1892.....	11-550	4-090	4-630	87-600	1921.....	12-502	4-545	4-655	62-652
1893.....	10-750	3-730	4-080	78-200	1922.....	13-382	5-734	5-716	67-520
1894.....	9-560	3-290	3-520	63-000	1923.....	14-421	7-267	6-607	64-874
1895.....	10-760	3-230	3-630	65-280	1924.....	13-024	8-097	6-344	66-788
1896.....	10-880	2-980	3-940	67-060	1925.....	14-042	9-020	7-622	69-063
1897.....	11-200	3-580	4-120	59-790	1926.....	13-795	8-417	7-337	62-107
1898.....	12-030	3-780	4-570	58-260	1927.....	12-920	6-755	6-242	56-370
1899.....	16-670	4-470	5-750	59-580	1928.....	14-570	6-305	6-027	58-176
1900.....	16-190	4-370	4-390	61-330	1929.....	18-107	6-833	6-512	52-993
1901.....	16-110	4-330	4-070	58-950	1930.....	12-982	5-517	4-556	38-154
1902.....	11-626	4-069	4-840	52-160	1931.....	8-116	4-243	3-640	28-700
1903.....	13-235	4-237	5-191	53-570	1932.....	5-555	3-180	2-876	27-892
1904.....	12-823	4-309	4-931	57-221	1933.....	7-025	3-869	4-029	34-727
1905.....	15-590	4-707	5-730	60-352	1934.....	8-428	3-860	4-158	47-973
1906.....	19-278	5-657	6-048	66-791	1935.....	8-649	4-065	4-328	64-273
1907.....	20-004	5-325	5-812	65-327	1936.....	9-474	4-710	4-901	45-087
1908.....	13-208	4-200	4-578	52-864	1937.....	13-167	6-009	6-519	44-883
1909.....	12-982	4-273	5-352	51-502	1938.....	10-000	4-739	4-610	43-225
1910.....	12-738	4-446	5-370	53-486	1939.....	10-965	5-053	5-110	39-082
1911.....	12-376	4-420	5-608	53-304	1940.....	11-296	5-179	6-335	34-773
1912.....	16-341	4-471	6-799	60-835	1941.....	11-797	5-793	7-474	34-783
1913.....	15-269	4-370	5-504	59-791	1942.....	11-775	6-481	8-250	38-333
1914.....	13-602	3-862	5-061	54-811	1943.....	11-775	6-500	8-250	44-750
1915.....	17-275	4-673	13-054	49-684	1944.....	11-775	6-500	8-250	44-750
1916.....	27-202	6-858	12-634	65-661	1945.....	11-775	6-500	8-250	51-928
1917.....	27-180	8-787	8-730	81-411	1946.....	13-820	8-109	8-726	80-151

(a) To 1902, price of zinc at New York; for later years, price of zinc at East St. Louis.

(b) To 1898, price of Lake Copper.

(c) 1932-1946—for other than newly mined domestic.

Table 16.—Average Annual Metal Prices, in Canadian Dollars, 1930-1946

Year	Gold	Silver	Copper	Lead	Zinc
	Troy oz.	Troy oz.	Pound	Pound†	Pound†
	\$	\$	\$	\$	\$
1930.....	20-67	0-381	0-130*	0-039	0-036
1931.....	21-55	0-298	0-0837*	0-027	0-025
1932.....	23-47	0-317	0-0638	0-021	0-024
1933.....	28-60	0-378	0-0745	0-024	0-032
1934.....	34-50	0-475	0-0742	0-024	0-030
1935.....	35-19	0-648	0-0780	0-031	0-031
1936.....	35-03	0-451	0-0948	0-039	0-033
1937.....	34-99	0-449	0-131	0-051	0-0490
1938.....	35-17	0-435	0-0997	0-034	0-031
1939.....	36-14	0-405	0-101†	0-032	0-031
1940.....	38-50	0-382	0-101	0-034	0-034
1941.....	38-50	0-3826	0-101	0-034	0-034
1942.....	38-50	0-4216	0-101	0-034	0-034
1943.....	38-50	0-4525	0-1175	0-0375	0-040
1944.....	38-50	0-430	0-120	0-045	0-043
1945.....	38-50	0-470	0-1255	0-050	0-0644
1946.....	36-75	0-8365	0-128	0-0675	0-0781

* Based on New York; 1932-1942 based on London.

† Based on London; prices controlled by Government since 1939 and subject to revision since 1939.

Table 17.—Principal Statistics of the Mineral Industry in Canada, by Industries, 1942-1946

1	2	3	4	5	6	7	8
Year	Number of active firms	Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	Capital employed (excluding ore reserves or other unmined material) (a)	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel also freight and smelter charges (c)	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries
			\$		\$	\$	\$
Metal Mining Industries							
ALLUVIAL GOLD MINES							
1942.....	80	80	10,071,917	471	1,283,274	206,635	4,114,995
1943.....	43	43	11,372,849	237	646,283	157,758	1,892,214
1944.....	47	47	.....	211	598,556	84,104	1,197,021
1945.....	38	38	.....	234	692,683	80,748	1,546,005
1946.....	39	39	.....	340	1,112,984	155,943	1,693,568
AURIFEROUS QUARTZ MINES							
1942.....	223	227	245,240,997	26,030	54,388,872	28,625,881	131,938,902
1943.....	151	156	212,675,979	19,038	40,665,283	21,236,137	95,597,710
1944.....	257	262	.....	17,226	37,023,505	19,029,032	75,234,384
1945.....	712	716	.....	18,388	37,690,177	18,242,253	67,577,062
1946.....	684	686	.....	21,973	47,211,062	22,080,531	66,342,152
COPPER-GOLD-SILVER MINES							
1942.....	26	28	84,776,243	5,646	11,097,412	35,459,148	33,688,642
1943.....	20	22	94,750,186	5,748	11,806,827	29,695,643	43,840,679
1944.....	23	26	.....	5,175	10,710,071	24,191,776	38,198,039
1945.....	38	41	.....	4,658	9,663,612	21,134,603	38,165,269
1946.....	41	43	.....	4,958	10,243,487	16,870,567	37,433,982
SILVER-COBALT MINES							
1942.....	13	14	358,691	192	283,980	150,043	600,207
1943.....	20	21	587,039	221	290,654	142,312	578,861
1944.....	10	11	.....	165	260,575	99,600	323,260
1945.....	7	8	.....	166	247,203	69,967	82,508
1946.....	11	11	.....	247	404,012	118,363	207,483
SILVER-LEAD-ZINC MINES							
1942.....	44	44	19,484,442	2,185	4,730,370	4,268,352	23,504,642
1943.....	31	32	20,603,191	3,097	6,423,724	5,140,238	21,932,644
1944.....	20	20	.....	2,769	5,810,290	4,489,198	16,802,759
1945.....	20	20	.....	2,485	5,473,582	4,234,261	22,867,203
1946.....	33	31	.....	2,451	5,987,111	9,079,895	39,262,606
NICKEL-COPPER MINES							
1942.....	4	8	48,303,780	7,147	15,365,207	8,186,777	50,801,633
1943.....	6	10	52,250,437	7,270	15,863,646	8,896,063	54,324,097
1944.....	5	9	.....	7,628	14,678,095	9,048,726	54,621,089
1945.....	4	8	.....	5,997	13,008,156	7,790,226	45,605,169
1946.....	5	9	.....	4,439	10,166,680	5,332,956	34,960,264
MISCELLANEOUS METAL MINES							
1942.....	68	67	3,956,427	1,352	2,396,731	1,519,686	3,996,555
1943.....	54	59	15,603,307	1,964	4,295,153	2,540,873	6,521,495
1944.....	27	27	.....	1,385	2,809,013	2,057,850	3,303,143
1945.....	24	23	.....	985	2,041,349	2,519,571	1,756,559
1946.....	21	21	.....	1,037	2,338,442	3,479,336	3,708,109
NON-FERROUS METAL SMELTING AND REFINING							
1942.....	10	15	353,052,965	21,162	37,340,556	(b) 321,736,152	+125,881,047
1943.....	9	16	392,217,159	26,749	48,491,732	(b) 399,356,356	+111,857,020
1944.....	9	16	.....	23,927	44,536,991	(b) 350,903,763	+123,303,038
1945.....	9	17	.....	16,771	33,853,120	(b) 265,777,648	+ 89,898,878
1946.....	9	15	.....	14,546	30,648,361	(b) 235,152,602	+ 69,565,922
Total Metal Mining Industries							
1942.....	468	483	768,245,462	64,185	126,886,402	400,152,674	374,526,623
1943.....	(d) 334	359	800,060,147	64,324	128,483,302	467,165,380	336,544,720
1944.....	(e) 398	418	.....	58,486	116,427,696	409,904,049	312,982,733
1945.....	(f) 852	871	.....	49,684	102,669,882	319,849,277	267,498,653
1946.....	(g) 843	855	.....	49,991	108,112,139	292,270,193	253,174,086

* Contains data relating to silver pitchblende ores in the Northwest Territories. † Value added by smelting.

(a) Not reported in 1944-1946.

(b) Includes fuel and electricity used for metallurgical purposes and cost of ores, etc., treated.

(c) See end of table.

(d) 285 producing. (e) 213 producing. (f) 183 producing. (g) 178 producing.

DOMINION BUREAU OF STATISTICS

Table 17.—Principal Statistics of the Mineral Industry in Canada, by Industries, 1942-1946—Continued

1 Year	2 Number of active firms	3 Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	4 Capital employed (excluding ore reserves or other unmined material) (a) \$	5 Number of employees	6 Salaries and wages \$	7 Cost of process supplies, purchased electricity and fuel also freight and smelter charges (c) \$	8 Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries \$
Total Non-Metal Mining Industries, including Fuels							
*FUELS							
COAL							
1942.....	380	419	108,766,697	26,205	42,091,137	10,965,528	49,473,22
1943.....	356	413	111,867,036	26,473	47,291,919	11,551,496	48,329,450
1944.....	341	394	.....	25,596	55,020,537	12,712,820	54,344,700
1945.....	324	373	.....	25,301	49,431,965	11,604,450	52,642,796
1946.....	315	365	.....	25,487	51,343,975	12,637,105	59,607,029
NATURAL GAS							
1942.....	212	3,566	82,768,602	1,940	2,826,811	104,802	11,251,548
1943.....	191	3,558	83,963,163	1,882	2,846,514	189,740	11,362,956
1944.....	211	3,621	.....	1,810	2,885,654	201,152	9,571,205
1945.....	218	3,748	.....	1,890	2,993,091	245,812	10,614,782
1946.....	219	3,825	.....	1,655	2,491,361	248,437	10,339,738
PETROLEUM							
1942.....	242	2,253	54,707,282	1,972	3,648,965	1,207,463	15,668,660
1943.....	233	2,197	59,058,622	2,399	5,212,895	912,358	15,994,422
1944.....	224	2,264	.....	2,547	5,814,676	1,242,795	14,575,563
1945.....	229	2,222	.....	1,968	3,898,662	866,059	13,255,862
1946.....	240	2,314	.....	1,563	3,260,571	1,024,016	13,701,033
TOTAL FUELS							
1942.....	834	6,238	246,242,581	30,117	48,566,913	12,877,793	76,393,487
1943.....	780	6,168	254,888,821	30,764	55,351,328	12,653,594	75,686,828
1944.....	766	6,279	.....	29,953	63,720,867	14,166,767	78,491,468
1945.....	771	6,343	.....	29,159	56,323,718	13,716,321	76,513,440
1946.....	774	6,504	.....	28,705	67,095,907	13,909,648	83,647,800
OTHER NON-METAL MINING INDUSTRIES							
ASBESTOS							
1942.....	8	10	18,741,364	3,749	5,299,454	4,393,973	18,277,235
1943.....	9	10	20,831,427	3,844	5,576,734	4,509,876	19,899,540
1944.....	9	10	.....	4,050	6,401,185	4,016,059	17,820,317
1945.....	11	12	.....	4,237	6,679,885	4,235,725	19,857,074
1946.....	11	12	.....	4,547	7,771,921	4,975,892	20,269,687
FELDSPAR, QUARTZ AND NEPHELINE SYENITE							
1942.....	36	38	2,563,248	533	782,903	412,028	1,586,968
1943.....	35	37	2,895,131	535	768,199	456,852	1,681,377
1944.....	41	42	.....	529	772,335	467,937	1,636,093
1945.....	31	31	.....	483	767,517	467,290	1,626,590
1946.....	34	36	.....	517	876,034	440,701	1,727,972

* Production of peat since 1929 included with the other non-metallics.

(c) See footnote at end of table. (a) not reported in 1944-1946.

Table 17.—Principal Statistics of the Mineral Industry in Canada, by Industries, 1942-1946—Continued

1	2	3	4	5	6	7	8
Year	Number of active firms	Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	Capital employed (excluding ore reserves or other unmined material) (a)	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel, also freight and smelter charges (c)	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries
			\$		\$	\$	\$
<i>OTHER NON-METAL MINING INDUSTRIES—Continued</i>							
GYPSUM							
1942.....	7	13	4,386,531	510	657,620	244,139	1,010,043
1943.....	6	12	5,147,424	438	617,780	248,043	1,133,425
1944.....	8	14	.....	328	490,872	387,941	1,124,037
1945.....	7	13	.....	434	647,287	575,645	1,207,645
1946.....	8	14	.....	753	1,246,673	806,571	2,890,156
IRON OXIDES (OCHRE)							
1942.....	5	5	194,541	47	44,288	26,615	125,038
1943.....	5	5	254,891	47	46,554	27,028	108,865
1944.....	6	6	.....	55	49,876	37,485	112,765
1945.....	5	5	.....	51	58,011	35,401	136,652
1946.....	5	5	.....	60	77,727	36,017	116,251
MICA							
1942.....	106	106	1,460,769	361	258,605	37,313	346,254
1943.....	78	78	458,402	430	357,992	54,395	499,461
1944.....	70	70	.....	400	359,797	56,624	734,402
1945.....	40	40	.....	174	190,138	50,492	182,778
1946.....	27	27	.....	129	153,616	38,086	160,953
PEAT (b)							
1942.....	35	35	3,212,921	1,316	1,380,142	277,086	1,031,211
1943.....	44	44	2,477,287	1,012	1,000,348	307,674	1,384,770
1944.....	39	39	.....	1,183	1,154,009	383,376	1,780,090
1945.....	37	37	.....	1,233	1,304,249	516,104	1,874,202
1946.....	41	41	.....	1,391	1,562,689	671,161	2,249,651
SALT							
1942.....	9	9	5,687,511	675	1,114,574	1,419,248	3,173,755
1943.....	9	9	5,490,594	682	1,223,009	1,539,774	3,648,854
1944.....	8	9	.....	710	1,302,143	1,498,424	3,287,680
1945.....	9	9	.....	724	1,329,384	1,623,241	3,241,456
1946.....	9	9	.....	713	918,566	1,590,416	2,890,423
TALC AND SOAPSTONE							
1942.....	10	10	567,665	115	113,601	59,113	251,711
1943.....	8	8	576,691	90	101,719	58,031	208,654
1944.....	6	6	.....	113	133,883	68,165	289,084
1945.....	5	5	.....	103	134,782	79,582	215,306
1946.....	5	5	.....	87	117,551	63,568	240,116
MISCELLANEOUS NON-METAL MINES							
1942.....	61	64	4,919,871	811	1,142,072	952,860	2,053,307
1943.....	52	54	3,522,842	911	1,363,526	1,208,470	2,268,237
1944.....	50	52	.....	865	1,500,250	1,188,860	2,797,719
1945.....	50	51	.....	879	1,601,068	1,378,366	3,037,352
1946.....	42	43	.....	911	1,582,846	1,389,098	2,859,009

(a) Not reported in 1944-1946.

(b) Includes data on peat fuel, peat moss and peat humus.

(c) See footnote at end of this table.

Table 17.—Principal Statistics of the Mineral Industry in Canada, by Industries, 1942-1946—Continued

1	2	3	4	5	6	7	8
Year	Number of active firms	Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	Capital employed (excluding ore reserves or other unmined material) (a)	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel, also freight and smelter charges (c)	Net value of bullion, ore, concentrates and other minerals shipped from the mines, smelters, brick and cement plants and quarries \$
			\$		\$	\$	\$
TOTAL OTHER NON-METAL MINING INDUSTRIES							
1942.....	277	290	41,734,421	8,117	10,793,259	7,822,575	27,855,522
1943.....	246	257	41,654,689	7,989	11,055,861	8,410,143	30,833,183
1944.....	237	243	.....	8,233	12,164,400	8,104,871	29,632,077
1945.....	195	203	.....	8,318	12,712,321	8,961,846	31,379,055
1946.....	182	192	.....	9,108	14,307,623	10,011,510	33,404,218

Total Non-Metal Mining Industries, including Fuels							
1942.....	1,111	6,523	287,977,002	38,234	59,360,172	20,100,168	104,248,959
1943.....	1,026	6,425	296,543,510	38,743	66,407,189	21,063,737	106,520,011
1944.....	1,013	6,527	.....	38,186	75,885,267	22,261,638	108,123,545
1945.....	966	6,546	.....	37,477	69,036,039	21,678,167	107,892,495
1946.....	956	6,696	.....	37,813	71,403,530	23,921,158	117,052,018

Clay Products and Other Structural Materials

CLAY PRODUCTS

Brick, Tile and Sewer Pipe

1942.....	111	115	17,181,503	2,152	2,777,171	1,420,355	5,016,090
1943.....	93	97	16,423,684	1,781	2,565,580	1,233,412	4,674,246
1944.....	98	102	.....	1,889	2,819,912	1,451,686	4,711,125
1945.....	92	98	.....	2,254	3,348,351	1,892,051	6,093,719
1946.....	102	111	.....	2,879	4,496,283	2,553,369	8,461,331

STONEWARE AND POTTERY

1942.....	8	8	612,428	371	295,840	30,884	614,394
1943.....	8	8	739,063	392	344,261	28,395	672,140
1944.....	8	8	.....	358	356,892	66,816	767,798
1945.....	8	8	.....	434	479,855	82,632	844,690
1946.....	8	8	.....	558	619,679	90,308	1,102,359

TOTAL CLAY PRODUCTS*

1942.....	119	123	17,793,931	2,523	3,073,011	1,451,239	5,630,484
1943.....	101	105	17,162,747	2,173	2,909,841	1,261,807	5,346,586
1944.....	106	110	.....	2,247	3,176,804	1,518,502	5,478,923
1945.....	100	106	.....	2,688	3,323,206	1,974,633	6,938,409
1946.....	110	119	.....	3,437	5,115,962	2,643,677	9,565,690

OTHER STRUCTURAL MATERIALS†

CEMENT

1942.....	3	8	51,121,894	1,241	2,059,337	5,414,487	10,213,916
1943.....	3	8	50,438,932	1,209	2,154,218	5,557,089	7,152,763
1944.....	3	8	.....	1,207	2,254,775	5,764,387	6,882,354
1945.....	3	8	.....	1,317	2,398,117	6,005,605	9,416,426
1946.....	3	8	.....	1,524	2,929,020	8,793,963	12,930,058

* Includes kaolin and other clays. (a) not reported in 1944-1946.

† A considerable proportion of the values shown for lime and stone sales represents shipments for chemical purposes—See chapter 9.

(c) See footnote at end of this table.

Table 17.—Principal Statistics of the Mineral Industry in Canada, by Industries, 1942-1946—Concluded

1	2	3	4	5	6	7	8
Year	Number of active firms	Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	Capital employed (excluding ore reserves or other unmined material) (a)	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel also freight and smelter charges (c)	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries
			\$		\$	\$	\$
<i>OTHER STRUCTURAL MATERIALS—Concluded</i>							
<i>LIME</i>							
1942.....	44	48	4,742,066	1,022	1,312,320	2,598,560	3,932,279
1943.....	41	45	4,607,651	898	1,408,393	1,924,482	4,908,510
1944.....	38	42	.....	815	1,414,426	2,046,550	5,005,235
1945.....	39	44	.....	856	1,473,829	2,068,489	4,663,859
1946.....	37	41	.....	918	1,616,839	2,412,041	4,910,127
<i>SAND AND GRAVEL</i>							
1942.....	1,419	5,217	4,477,547	2,141	2,404,755	677,149	8,328,265
1943.....	1,387	5,054	3,674,501	2,320	2,683,257	379,435	8,626,422
1944.....	1,541	5,381	.....	1,773	2,494,637	391,738	9,888,381
1945.....	1,524	5,011	.....	2,074	2,759,206	416,390	10,151,973
1946.....	1,589	5,252	.....	2,793	3,600,797	579,489	14,950,211
<i>STONE</i>							
1942.....	412	490	10,988,011	2,697	3,454,263	1,517,169	7,229,425
1943.....	407	453	10,954,939	2,473	3,529,755	1,533,627	6,430,552
1944.....	405	466	.....	2,164	3,154,689	1,497,880	5,661,297
1945.....	361	429	.....	2,154	3,114,647	1,451,715	6,714,985
1946.....	411	486	.....	2,720	3,970,404	1,691,598	9,494,113
<i>TOTAL OTHER STRUCTURAL MATERIALS</i>							
1942.....	1,878	5,763	71,329,518	7,101	9,230,675	10,207,965	29,703,885
1943.....	1,838	5,560	69,676,023	6,900	9,775,623	9,394,653	27,118,247
1944.....	1,987	5,897	.....	6,959	9,318,547	9,700,555	27,437,267
1945.....	1,927	5,492	.....	6,401	9,745,799	9,942,199	30,947,243
1946.....	2,040	5,787	.....	7,955	12,117,060	13,477,091	42,284,509
<i>Total Clay Products and Other Structural Materials</i>							
1942.....	1,997	5,886	89,123,449	9,624	12,303,686	11,658,604	35,334,369
1943.....	1,939	5,665	86,838,770	9,073	12,685,464	10,656,440	32,464,633
1944.....	2,093	6,007	.....	8,206	12,495,351	11,219,957	32,916,190
1945.....	2,027	5,598	.....	9,089	13,574,005	11,916,882	37,885,652
1946.....	2,150	5,906	.....	11,392	17,233,022	16,120,768	51,848,199
<i>GRAND TOTAL OF ALL INDUSTRIES</i>							
1942.....	3,576	12,897	1,145,345,913	112,043	198,550,260	431,911,446	514,109,951
1943.....	3,299	12,449	1,183,442,427	112,140	207,575,955	498,885,557	475,529,364
1944.....	3,504	12,952	.....	104,878	204,808,314	443,384,744	454,022,468
1945.....	3,845	13,015	.....	96,250	185,279,926	353,444,326	413,276,500
1946.....	3,949	13,457	.....	99,196	196,748,691	332,312,119	422,074,303

NOTE.—The net value as given in column 8 represents the gross value as given by the operator less the cost of items indicated in column 7. (a) Not reported in 1944-1946.
(c) See note above.

Table 18.—Principal Statistics of the Mineral Industry in Canada, by Provinces, 1942-1946

1	2	3	4	5	6	7
Year	Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	Capital employed (excluding ore reserves or other unmined material) (a)	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel also freight and smelter charges (b) (c)	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries (*)
		\$		\$	\$	\$
NOVA SCOTIA						
1942.....	694	49,436,020	14,394	22,169,053	6,594,557	25,174,960
1943.....	712	51,261,925	13,852	25,348,097	6,737,166	21,979,202
1944.....	509	.....	13,538	30,815,335	7,064,988	25,208,621
1945.....	656	.....	14,091	26,707,708	7,265,785	23,684,321
1946.....	660	.....	14,560	27,572,966	7,912,532	26,425,106
NEW BRUNSWICK						
1942.....	433	4,401,029	1,718	1,855,798	404,750	3,176,007
1943.....	433	4,320,846	1,570	1,828,019	396,622	3,249,933
1944.....	429	.....	1,631	2,240,478	463,353	3,631,871
1945.....	427	.....	1,525	2,200,188	480,155	3,636,205
1946.....	433	.....	1,600	2,363,247	602,186	4,236,861
QUEBEC						
1942.....	3,442	329,023,834	27,235	42,901,445	169,770,830	138,100,940
1943.....	3,332	368,560,300	31,491	52,859,348	234,019,383	134,500,359
1944.....	3,747	.....	27,973	49,498,836	191,719,356	145,964,861
1945.....	3,441	.....	22,374	39,674,306	119,179,856	106,701,600
1946.....	3,492	.....	22,799	41,793,277	103,398,023	97,020,447
ONTARIO						
1942.....	6,324	438,130,467	36,866	72,868,161	168,749,548	212,351,819
1943.....	6,128	426,410,248	33,516	67,732,244	177,688,655	183,488,086
1944.....	6,242	.....	33,194	64,766,975	176,635,812	161,819,719
1945.....	6,379	.....	30,634	61,414,603	153,297,060	155,367,764
1946.....	6,488	.....	31,244	63,895,634	120,018,172	147,605,421
MANITOBA						
1942.....	173	33,172,231	2,512	4,600,171	12,476,881	9,508,569
1943.....	150	29,033,717	1,777	3,497,951	9,429,404	8,973,959
1944.....	145	.....	1,732	3,369,320	9,697,444	10,288,654
1945.....	156	.....	1,763	3,460,480	11,294,429	10,794,127
1946.....	178	.....	2,232	4,446,790	11,719,343	12,489,188
SASKATCHEWAN						
1942.....	219	34,755,279	2,450	4,401,181	22,710,389	14,487,408
1943.....	206	47,167,799	3,067	5,737,896	24,468,836	23,507,079
1944.....	195	.....	2,652	5,328,535	21,184,997	18,362,133
1945.....	198	.....	2,457	5,020,119	20,969,841	19,382,105
1946.....	241	.....	2,957	5,672,652	23,062,280	22,743,522

Plants in the provinces do not add to Canada total, owing to the fact that a plant located on the Manitoba-Saskatchewan boundary is counted but once.

* See footnote, preceding table.

(a) Not reported in 1944-1946.

(b) Includes fuel and electricity used for metallurgical purposes.

(c) See footnote, preceding table

Table 18.—Principal Statistics of the Mineral Industry in Canada, by Provinces, 1942-1946—Concluded

1	2	3	4	5	6	7
Year	Number of operating mines, oil and gas wells, quarries gravel pits, etc.	Capital employed (excluding ore reserves or other unmined material)	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel also freight and smelter charges (b) (c)	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries (*)
		\$		\$	\$	\$
ALBERTA						
1942.....	723	126,642,796	11,446	19,628,105	4,736,312	40,604,704
1943.....	795	128,657,659	12,316	21,825,643	4,982,748	41,767,222
1944.....	882	.....	11,582	23,389,050	5,674,431	42,672,706
1945.....	935	.....	11,438	22,867,506	4,991,551	44,421,660
1946.....	1,022	.....	11,476	23,641,650	5,880,366	50,981,943
BRITISH COLUMBIA						
1942.....	845	110,267,057	14,323	27,166,996	45,101,414	64,378,171
1943.....	654	107,674,852	13,399	25,703,433	40,092,618	54,106,996
1944.....	724	.....	11,871	23,118,465	30,058,974	43,986,511
1945.....	697	.....	11,450	22,520,369	35,678,748	47,859,524
1946.....	836	.....	11,562	25,109,066	59,197,865	58,620,880
NORTHWEST TERRITORIES						
1942.....	29	8,888,280	701	1,737,398	951,183	3,017,569
1943.....	31	8,391,343	800	1,999,661	364,802	2,305,032
1944.....	71	.....	566	1,798,896	213,041	1,219,472
1945.....	120	.....	345	825,572	218,150	252,227
1946.....	104	.....	510	1,346,718	415,456	582,600
YUKON						
1942.....	15	10,578,920	398	1,221,952	415,582	3,309,804
1943.....	8	11,963,738	352	1,043,663	705,323	1,652,496
1944.....	8	.....	139	482,424	72,348	867,920
1945.....	7	.....	173	589,075	68,751	1,177,267
1946.....	3	.....	246	906,691	105,895	1,368,335
Canada						
1942.....	12,897	1,145,345,913	112,043	198,550,260	431,911,446	514,109,951
1943.....	12,449	1,183,442,427	112,140	207,575,955	498,885,557	475,529,364
1944.....	12,952	.....	104,878	204,808,314	443,384,744	454,022,465
1945.....	13,016	.....	96,250	185,279,926	353,444,326	413,276,800
1946.....	13,457	.....	99,196	196,748,691	332,312,119	422,074,303

Plants in the provinces do not add to Canada total, owing to the fact that a plant located on the Manitoba-Saskatchewan boundary is counted but once.

* See footnote, preceding table.

(a) The value of Pitchblende refinery products is credited to the non-ferrous smelting and refining industry in Ontario and data relating to Pitchblende mining operations are included with Yukon. The value of Pitchblende refinery products are not included in 1943-1946.

(b) Includes fuel and electricity used for metallurgical purposes.

(c) See footnote, preceding table.

TREND IN EMPLOYMENT, 1946

(Employment Statistics Branch—D.B.S.)

MINING

The volume of employment generally indicated in mining was greater by 5.7 per cent in 1946 than in 1945; fractionally higher than in 1944. The latest index was, nevertheless, lower than in 1943 and earlier years of the war. The 1946 annual index in mining stood at 155.2 as compared with 146.9 in the preceding 12 months. Industrial disputes again seriously affected the situation during 1946, there being large losses due to this factor among workers in the metallic ores division during a lengthy period.

Statistics were tabulated from 535 mine operators whose working forces averaged 73,164. In 1945, data were supplied by 502 mines with a staff of 69,173 persons. The weekly salaries and wages disbursed by the co-operating mining companies and branches during 1946 averaged \$2,869,465; this was greater by 7.4 per cent than the payrolls reported in the preceding year. The average earnings were \$39.21 as compared with \$38.60 in 1945, \$38.05 in 1944, \$36.09 in 1943 and \$34.81 in 1942. The latest per capita figure was higher by \$6.73, or 20.7 per cent, than the general average earnings in the nine leading industries, being exceeded only by the mean of \$40.07 in transportation, in which the employees are also predominately male.

Coal Mining.—There was a rather small increase in employment in coal mining during 1946, according to returns from 142 employers with a staff of 26,138 persons, as compared with 25,551 reported in 1945. The latest annual index number, at 94.8, was 2.3 per cent higher than in the preceding 12 months. The accompanying increase in the index weekly payrolls amounted to 7.1 per cent; the reported salaries and wages averaged \$1,020,346 in the year under review, when the per capita weekly earnings stood at \$39.03. This was the highest in the record. The means in earlier years of the record were as follows: 1945, \$38.19; 1944, \$36.95; 1943, \$33.18 and 1942, \$31.09.

During 1946, the time lost in coal mining as a result of industrial disputes amounted to 43,854 man-days, as compared with 183,102 in 1945.

Metallic Ores.—In spite of prolonged strikes in the metal mining industries in British Columbia and Quebec, and continued shortages of labour in certain areas, employment in the extraction of metallic ores reached a higher level during 1946 than in 1945. A combined working force of 34,655 persons was employed during the year under review by the 255 reporting operators; in 1945, the 231 firms furnishing data had an average of 32,302 employees. The latest index was 269.9, being higher by 7.2 per cent than that of 251.7 a year earlier. The accompanying increase in the index of payrolls was 8.7 per cent. The indicated disbursements in weekly salaries and wages averaged \$1,443,125. The per capita figure was \$41.63, rising from \$41.02 per week in 1945. The previous annual averages were: 1944, \$40.68; 1943, \$39.70, and 1942, \$38.60.

During the 12 months under review, the hours worked per week in the 141 establishments furnishing information on man-hours averaged 45.1, as compared with 45.8 in 1945, when the hourly rate was 85 cents, as compared with 87.4 cents in 1946. The employees working these hours averaged 29,636; the difference as compared with the staff of 34,655 workers mentioned in the preceding paragraph was made up of salaried personnel and wage-earners paid other than by the hour.

Non-Metallic Minerals Other Than Coal.—The trend continued upward during 1946 in the extraction of miscellaneous non-metallic minerals. An average of 12,371 men and women was employed by the 138 co-operating employers; in the year before, 130 operators had reporting 11,320 employees. The latest annual index of employment stood at 183.8, exceeding the 1945 figure by 8.6 per cent. In the same comparison, the index of payrolls advanced by 7.9 per cent. The weekly salaries and wages disbursed averaged \$405,994, or \$32.77 per person in recorded employment. In 1945, 1944, 1943 and 1942, the per capita figures were \$32.64, \$32.34, \$30.84 and \$28.51, respectively. Greater activity in construction work resulted in a higher level of employment in most branches of this industry in the year under review.

Table 19.—Employees, Salaries and Wages in the Mineral Industry in Canada, by Provinces, 1946

Province	*Average number of employees					Salaries and wages		
	Administrative		Workmen		Total †	Salaries	Wages	Total
	Male	Female	Male	Female		\$	\$	\$
Nova Scotia.....	381	64	14,111	4	14,560	998,178	26,574,788	27,572,966
New Brunswick.....	55	16	1,510	19	1,600	172,018	2,191,229	2,363,247
Quebec.....	2,162	350	20,118	169	22,799	5,991,989	35,801,288	41,793,277
Ontario.....	2,840	419	27,764	221	31,244	9,512,853	54,382,781	63,895,634
Manitoba.....	173	31	1,990	48	2,242	607,879	3,838,911	4,446,790
Saskatchewan.....	278	58	2,603	18	2,957	869,943	4,802,709	5,672,652
Alberta.....	1,100	130	9,988	258	11,476	2,807,167	20,834,483	23,641,650
British Columbia.....	1,441	268	9,649	204	11,562	4,657,481	20,451,585	25,109,066
Yukon.....	24	3	219	.....	246	126,604	780,087	906,691
Northwest Territories.....	81	11	410	8	510	254,632	1,092,086	1,346,718
Canada.....	8,535	1,350	88,362	949	99,196	25,998,744	170,749,947	196,748,691

* The average number of wage-earners was obtained by adding the monthly figures for individual companies and dividing by the number of months worked, the average number of wage-earners in the industry, as in the previous years, is the sum of these individual averages.

† The data are not inclusive of all individuals or syndicates engaged exclusively in prospecting or general exploration.

Table 20.—Employees, Salaries, and Wages in the Mineral Industry in Canada, by Industries, 1946

Industry	Average number of employees				Salaries and wages			
	Administrative		Workmen		Total	Salaries	Wages	Total
	Male	Female	Male	Female				
METAL MINING								
Alluvial Gold.....	38	6	291	5	340	176,274	936,710	1,112,984
Auriferous Quartz.....	2,285	187	19,346	155	21,973	7,243,424	39,967,638	47,211,062
Copper-Gold-Silver.....	470	105	4,296	87	4,958	1,777,136	8,466,351	10,243,487
Silver-Cobalt.....	20	3	223	1	247	59,085	344,927	404,012
Silver-Lead-Zinc.....	336	63	2,030	22	2,451	1,047,121	4,939,990	5,987,111
Nickel-Copper.....	380	21	4,035	3	4,439	1,322,680	8,844,000	10,166,680
Miscellaneous Metal Mines.....	81	21	925	10	1,037	291,452	2,046,990	2,338,442
Non-Ferrous Smelting and Refining.....	1,800	438	12,239	69	14,546	6,277,577	24,370,784	30,648,361
FUELS								
Coal.....	1,231	101	24,137	18	25,487	2,912,813	48,431,162	51,343,975
Natural Gas.....	351	69	1,217	18	1,655	715,225	1,776,136	2,491,361
Petroleum.....	324	81	1,141	17	1,563	990,683	2,269,888	3,260,571
NON-METALLIC								
Asbestos.....	394	71	4,055	27	4,547	998,539	6,773,382	7,771,921
Feldspar and Quartz.....	38	7	468	4	517	106,905	769,129	876,034
Gypsum.....	41	9	698	5	753	110,745	1,135,928	1,246,673
Iron Oxides.....	6	3	45	6	60	15,748	61,979	77,727
Mica.....	12	4	105	8	129	30,984	122,632	153,616
Peat.....	49	15	1,217	110	1,391	156,693	1,405,996	1,562,689
Salt.....	43	26	577	67	713	207,532	711,034	918,566
Talc and Soapstone.....	9	2	76	.....	87	27,455	90,096	117,551
Miscellaneous.....	87	15	807	2	911	230,609	1,352,237	1,582,846
STRUCTURAL MATERIALS AND CLAY PRODUCTS								
Cement.....	97	8	1,400	19	1,524	246,992	2,682,028	2,929,020
Clay Products.....	138	41	2,987	271	3,437	385,133	4,730,829	5,115,962
Lime.....	49	11	850	8	918	132,431	1,484,408	1,616,839
Sand and Gravel.....	107	16	2,658	12	2,793	218,786	3,382,011	3,600,797
Stone.....	149	27	2,539	5	2,720	316,722	3,653,682	3,970,404
Total.....	8,535	1,350	88,362	949	99,196	25,998,744	170,749,947	196,748,691

Table 21.—Employees and Salaries and Wages Paid in Canadian Mining Industry, 1932-1946

Year	Nova Scotia		New Brunswick		Quebec		Ontario		Manitoba		Saskatchewan	
	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$
1932.....	13,706	11,302,801	1,480	1,123,080	7,694	8,198,379	16,376	24,412,126	1,730	2,106,017	924	748,782
1933.....	13,915	9,852,765	1,629	1,402,114	8,629	8,621,984	17,306	25,600,168	1,379	1,847,251	1,265	1,111,001
1934.....	13,500	13,594,114	1,722	1,276,770	10,362	10,492,169	22,033	32,619,846	1,948	2,796,454	1,461	1,257,282
1935.....	14,550	14,301,510	2,390	1,865,407	11,811	12,794,600	25,264	38,152,140	2,346	3,403,649	1,457	1,343,041
1936.....	15,368	15,980,687	1,744	1,248,431	14,225	15,774,362	31,105	46,899,805	2,932	3,752,367	1,828	1,937,825
1937.....	15,629	18,373,958	3,012	1,509,063	19,121	22,708,131	36,238	58,891,339	3,159	4,301,366	2,307	2,372,443
1938.....	15,591	15,959,095	3,042	2,074,273	20,829	24,485,254	35,791	58,926,900	2,840	4,393,270	2,287	2,470,530
1939.....	15,202	17,371,518	3,263	2,311,835	20,872	25,689,382	37,233	63,220,042	3,027	4,541,992	2,026	2,347,264
1940.....	14,934	19,285,662	2,240	1,939,160	21,726	29,025,418	38,774	66,395,845	3,145	5,107,054	1,961	2,573,878
1941.....	15,246	21,388,809	2,262	2,097,842	23,149	34,008,021	40,496	74,902,555	3,101	5,312,075	1,977	3,105,529
1942.....	14,394	22,169,053	1,718	1,855,798	27,235	42,901,445	36,866	72,868,161	2,512	4,600,171	2,450	4,401,181
1943.....	13,852	25,348,097	1,570	1,828,019	31,491	52,859,348	33,516	67,732,244	1,777	3,497,951	3,067	5,737,896
1944.....	13,538	30,815,335	1,631	2,240,478	27,973	49,498,836	33,194	64,766,975	1,732	3,369,320	2,652	5,328,535
1945.....	14,091	26,707,708	1,525	2,200,188	22,374	39,674,306	30,634	61,414,603	1,763	3,460,480	2,457	5,020,119
1946.....	14,560	27,572,966	1,600	2,363,247	22,799	41,793,277	31,244	63,895,634	2,242	4,446,790	2,957	5,672,652

Year	Alberta		British Columbia		Yukon		Northwest Territories (a)		Canada	
	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$
1932.....	9,692	10,476,449	9,565	12,612,151	286	761,585	17	30,679	61,470	71,772,049
1933.....	9,057	9,463,382	9,845	11,455,946	233	545,692	76	131,502	63,334	70,031,805
1934.....	9,843	9,792,297	12,270	15,482,102	286	660,814	80	154,338	73,505	88,126,186
1935.....	9,706	10,862,198	12,352	16,479,606	333	809,067	47	69,341	80,256	100,080,559
1936.....	10,376	11,850,463	12,827	17,908,553	566	1,372,917	28	40,812	90,999	116,766,222
1937.....	10,843	12,924,934	14,282	21,487,277	691	1,502,692	132	221,181	105,414	144,292,384
1938.....	10,612	12,811,975	15,179	21,975,143	794	1,962,941	310	584,619	107,275	145,644,000
1939.....	10,548	13,097,818	14,587	21,698,690	728	1,605,671	273	468,996	107,759	152,353,208
1940.....	10,628	14,535,789	14,420	23,227,719	617	1,518,747	441	880,414	108,886	164,489,686
1941.....	11,141	17,065,351	14,801	25,797,418	501	1,570,683	553	1,174,903	113,227	186,423,186
1942.....	11,435	19,628,105	14,323	27,166,996	398	1,221,952	701	1,737,398	112,032	198,550,260
1943.....	12,316	21,825,643	13,399	25,703,433	352	1,043,663	800	1,999,661	112,140	207,575,955
1944.....	11,582	23,389,050	11,871	23,118,465	139	482,424	566	1,798,896	104,878	204,808,314
1945.....	11,438	22,867,506	11,450	22,520,369	173	589,075	345	825,572	96,250	185,279,926
1946.....	11,476	23,641,650	11,562	25,109,066	246	906,691	510	1,346,718	99,196	196,748,691

(a) Data relating to mining of Pitchblende ores included with Yukon until 1942, these data not available since.

Table 22.—Wage-earners on Surface, Underground and in Mill, 1946

Province	Metal Mines			Fuels			Other†		
	Surface (a)	Under- ground	Mill	Surface	Under- ground	Mill	Surface	Under- ground	Mill
Nova Scotia.....	17	45	6	1,882	10,980	.....	713	36	436
New Brunswick.....	.....	.....	.....	325	517	.....	491	5	191
Quebec.....	2,685	3,603	4,519	.....	.....	.....	4,830	488	4,162
Ontario.....	5,607	10,841	6,603	912	.....	.....	1,977	224	1,821
Manitoba.....	592	483	169	.....	.....	.....	483	25	286
Saskatchewan.....	743	502	559	299	146	.....	158	.....	214
Alberta.....	.....	.....	.....	3,644	5,626	.....	138	.....	838
British Columbia.....	1,085	1,795	3,266	539	1,658	.....	1,065	.....	445
Yukon.....	.....	.....	219	.....	.....	.....	.....	.....	.....
Northwest Territories (b).....	284	99	15	20	.....	.....	.....	.....	.....
Total, 1946.....	11,013	17,368	15,356	7,621	18,927	.....	9,855	778	8,393
Total, 1945.....	9,873	15,750	17,073	7,115	18,509	.....	8,210	694	6,745
Total, 1944.....	9,129	18,380	23,861	7,746	18,629	.....	7,715	782	6,305
Total, 1943.....	9,641	20,497	26,974	8,560	18,953	.....	8,332	783	6,297
Total, 1942.....	28,724	24,780	3,969	7,932	19,227	.....	11,743	938	3,427
Total, 1941.....	25,940	28,388	4,198	7,902	19,608	.....	12,915	923	3,208

† Includes asbestos, salt, gypsum, stone quarries, brick plants, etc., etc.

(a) Including non-ferrous smelters and refineries until 1942; since then employees in these plants shown under mill.

(b) Exclusive of data on mining of pitchblende ores.

Table 23.—Administration and Office Employees at Places in Canada, Except at Mine or Plant, 1946

Plant Location	Average number of employees			Salaries and Wages
	Male	Female	Total	
Nova Scotia.....	358	88	446	\$ 1,245,760
New Brunswick.....	14	12	26	58,147
Quebec.....	247	93	340	846,161
Ontario.....	415	194	609	1,483,691
Manitoba.....	25	9	34	79,326
Saskatchewan.....	5	4	9	13,416
Alberta.....	397	111	508	1,298,539
British Columbia.....	81	37	118	459,314
Yukon.....	.....	.....	.....	.....
Northwest Territories.....	39	4	43	92,198
Canada.....	1,581	552	2,133	5,576,552

Data in tables 23 and 24 not included elsewhere in this report.

Table 24.—Administration and Office Employees at Places in Canada, Except at Mine or Plant, 1946

Industry	Average number of employees			Salaries and Wages
	Male	Female	Total	
Metal Mining.....	341	114	455	\$
Non-Ferrous Smelting.....				1,321,292
and Refining.....				.....
Fuels.....	1,000	348	1,348	3,365,156
Non-Metallic Mining.....	44	18	62	219,140
Structural Materials and Clay Products.....	196	72	268	670,964
Total.....	1,581	552	2,133	5,576,552

Table 25.—Fuel and Electricity Used for all Purposes in the

Industry	Bituminous		Anthracite coal		Lignite and Sub-bituminous coal	Coke	Gasoline	Kerosene	Charcoal
	Canadian	Imported	From United States	From other countries					
	Tons	Tons	Tons	Tons	Tons	Tons	imp. gal.	imp. gal.	lb.
METAL MINING									
Alluvial Gold.....Quantity	11	1				2	40,545	16,971	
\$	1,056	35				200	21,879	4,667	
Auriferous Quartz.....Quantity	7,566	51,147	2,576	298	926	178	541,737	90,903	9,706
\$	100,425	623,716	39,106	4,159	8,193	3,226	203,595	15,926	692
Copper-Gold Silver.....Quantity	7,224	1,941	82		45,313	91	98,876	7,196	3,600
\$	68,454	27,887	1,577		176,485	1,537	33,974	1,971	82
Silver-Cobalt.....Quantity	12	1,453	58				8,741	270	
\$	194	21,819	1,116				3,060	59	
Silver-Lead-Zinc.....Quantity	41,198	2,234	80		5,531	211	28,066	2,293	
\$	229,515	27,321	1,200		21,302	1,479	10,626	556	
Nickel-Copper.....Quantity	185	23,066	59			21	77,324	2,135	
\$	1,819	182,851	884			285	21,181	449	
Miscellaneous Metals.....Quantity	1,000	2,184				134	132,098	998	
\$	11,286	24,345				866	36,364	280	
Non-Ferrous Smelting and Refining.....Quantity	208,693	431,280				207,846	312,531	22,736	1,260,034
\$	1,672,802	3,585,164				2,617,872	101,579	4,776	25,318
Total.....Quantity	265,889	513,306	2,855	298	51,770	208,483	1,239,918	143,502	1,273,340
\$	2,085,551	4,493,138	43,883	4,169	205,980	2,625,465	432,258	28,684	26,092
NON-METAL MINING FUELS									
Coal.....Quantity	485,409				40,106		431,563	23,705	
\$	1,737,958				61,430		133,525	4,357	
Natural Gas.....Quantity	11	38	4	3			68,730		
\$	150	577	60	36			20,992		
Petroleum.....Quantity	870	6	36		282		198,353	742	
\$	7,807	66	36		1,905		48,495	208	
Total.....Quantity	486,290	44	6	3	40,588		698,696	24,447	
\$	1,746,916	643	96	36	63,336		203,012	4,565	
OTHER NON-METAL MINING									
Asbestos.....Quantity	585	30,779	19,898				200,053	5,929	
\$	5,286	314,687	180,281				60,250	995	
Feldspar, Nepheline.....Quantity	1,347	2,988	28			3	108,044	294	
Syenite and Quartz.....Quantity	13,779	23,840	570			42	32,241	63	
Gypsum.....Quantity	10,165	4,074				942	174,770	1,145	
\$	86,379	34,543				13,103	41,740	238	
Iron Oxides.....Quantity		800	25				3,420	100	
\$		9,400	375				1,043	20	
Mica.....Quantity	8	85	25				17,455		
\$	124	1,020	425				5,570		
Peat.....Quantity	1,718		5				109,459		
\$	18,636		77				31,718		
Salt.....Quantity	13,217	50,789			13,255		7,290	42	
\$	98,785	363,806			23,650	1,449	1,872	12	
Talc and Soapstone.....Quantity					93,932	7,608	10,875	30	
\$							3,097	6	
Miscellaneous.....Quantity	4,218	19,545	45		18,065	14	194,344	2,399	
\$	26,091	186,100	808		59,329	195	55,560	463	
Total.....Quantity	31,258	109,060	20,026		43,432	2,408	825,710	9,939	
\$	249,080	933,401	182,534		166,616	20,948	233,091	1,767	
STRUCTURAL MATERIALS AND CLAY PRODUCTS									
Cement.....Quantity	172,081	289,046					172,742	8,391	
\$	1,237,718	2,233,402					45,603	1,587	
Clay Products.....Quantity	49,575	113,942	4,296		8,395	1,863	256,670	8,427	
\$	482,952	1,082,196	35,268		26,907		75,848	1,633	
Lime.....Quantity	34,104	113,075		1,758		15,979	129,392		
\$	325,278	870,257		16,581		198,319	37,271		
Sand and Gravel.....Quantity	4,855	13,628	327		58		776,134	18,829	
\$	46,890	112,838	3,446		368		219,540	4,085	
Stone.....Quantity	4,486	8,957	975	4		115	91,048	2,524	
\$	47,385	83,304	7,868	60		1,508	234,702	521	
Total.....Quantity	265,101	538,648	5,598	1,762	8,453	17,957	2,125,986	38,171	
\$	2,140,283	4,381,997	46,582	16,641	27,275	221,420	612,964	7,826	
Grand Total.....Quantity	1,048,538	1,161,058	28,485	2,063	144,043	228,848	4,890,310	216,059	1,273,340
\$	6,220,769	9,809,179	273,095	20,836	463,106	2,867,833	1,481,325	42,872	26,092

(a) Exclusive cost of ores treated.

Mineral Industry in Canada, by Kinds and Industries, 1946

Fuel oil and diesel oil	Wood	Gas		Other fuel	Electricity purchased	Total	Electricity generated for own use	Electricity generated for sale	Process supplies
		Manufactured	Natural						
Imp. gal.	Cords	M cu.ft.	M cu. ft.	\$	K.W.H.	\$	K.W.H.	K.W.H.	\$
80,507	1,925						22,401,700	6,366,700	
31,257	25,112					84,206		27,726	46,870
3,090,658	42,601	9,000			765,985,551		48,374,767	4,603,759	
504,119	333,023	245		719	4,422,732	6,259,876		47,170	14,401,904
820,897	3,777				264,970,106		57,484,069	785,157	
115,428	15,671				709,859	1,152,925		12,219	4,022,508
25,198	33				3,525,072				
3,716	296				28,452	58,712			48,932
347,222	102				72,279,192		2,986,665		
43,995	866				443,276	780,136			2,636,735
741,602	97				123,253,197				4,657,021
78,548	592				389,326	675,935			
1,057,708	1,293				106,103,602				670,648
137,539	11,577				517,274	739,531			
29,690,722	1,642	8,979	422		6,098,232,967		11,190,000	4,528,000	
1,965,875	21,972	8,171	321		12,283,722	22,287,572		14,630	(a) 16,000,964
35,854,514	51,470	17,979	482		7,434,349,687		142,437,201	16,283,616	
2,880,477	409,109	8,416	321	719	18,794,641	32,038,393		101,745	42,485,582
191,381	16				182,692,887		57,150,855	11,812,829	
32,484	75				2,130,364	4,100,193		157,185	8,536,912
77,286			591,921		32,513		835,820		
7,567			196,206		1,392	226,980			21,457
264,999	1,518		4,446,911		1,706,407		8,400		
15,955	6,470		802,967	1,850	28,792	914,551			109,555
533,676	1,634		5,038,832		184,431,807		67,995,075	11,812,829	
66,006	6,545		999,173	1,850	2,160,548	5,241,724		157,185	8,687,924
147,871					154,652,815				
27,062					1,170,901	1,759,462			1,670,496
538,289	267				3,851,800		2,588,033		
59,169	2,244				29,260	161,208			180,207
253,185	563		11,095		4,912,506		2,471,642		
26,522	4,084		4,438		49,427	260,479			520,868
1,500	225				226,064				
180	2,475				3,163	16,656			4,200
12,684	167				1,357,230		9,300		
1,462	1,103				10,604	20,308			17,778
12,566	94	42			2,584,741		780		
2,519	755	31			35,013	102,004			45,299
37,160				87	3,791,722		6,318,388		
3,727				63	27,307	597,112			138,630
19,610	25				1,599,300		122,380		
2,767	125				19,406	25,401			9,606
5,293,061	1,164	267,800			12,356,251		4,933,590		
339,162	8,404	31,920			114,516	822,546			493,642
6,315,926	2,505	267,842	11,182		185,332,429		16,444,113		
462,570	19,190	31,951	4,501		1,459,597	3,765,176			3,080,726
168,392	52				193,679,422		347,383		
19,392	351				949,443	4,487,496			2,704,949
1,757,142	29,344		1,565,067		21,490,172		302,793		
127,284	206,621		37,604	2,456	265,190	2,365,552			278,125
1,659,781	43,074				14,120,798		2,825,670	43,200	
97,500	309,761			3,700	96,761	1,955,428		437	209,385
135,657	45		158		6,550,328				
18,144	175		95		95,886	501,467			78,022
385,464	1,112		4,458		31,208,371		582,325		
54,104	6,815		3,210	584	394,763	834,824			856,774
4,106,436	75,627		1,569,683		267,049,091		4,068,171	43,200	
316,424	523,723		40,909	6,740	1,802,043	10,144,767		437	4,127,255
46,810,552	129,136	285,821	6,620,119		8,071,163,014		220,934,560	28,139,645	
3,715,477	953,567	40,367	1,044,904	9,309	24,216,829	51,190,560		259,367	58,361,487

Table 26.—Fuel and Electricity Used for all Purposes in the

Province	Bituminous		Anthracite coal		Lignite and Sub-bituminous coal	Coke	Gasoline	Kerosene	Charcoal
	Canadian	Imported	From United States	From other countries					
	Tons	Tons	Tons	Tons	Tons	Tons	imp. gal.	imp. gal.	lb.
Nova Scotia.....	Quantity	315,973				16	284,243	1,687	
	\$	1,382,674				68	73,538	291	
New Brunswick.....	Quantity	23,889					84,080	2,385	
	\$	174,644					21,134	473	
Quebec.....	Quantity	142,103	279,989	22,198	1,004		2,757	1,483,436	119,437
	\$	1,343,427	2,572,820	211,144	10,608		34,866	464,543	20,744
Ontario.....	Quantity	15,853	876,426	6,275	1,059		300	1,615,782	34,678
	\$	152,334	7,192,804	61,293	10,228		2,175,689	476,638	7,712
Manitoba.....	Quantity	62,978	4,541			300	1,123	123,927	2,155
	\$	563,594	41,279			96,064	16,301	43,733	587
Saskatchewan.....	Quantity	63,526	85			41,687	113	235,551	4,736
	\$	551,816	1,836			94,103	1,764	80,260	1,268
Alberta.....	Quantity	205,596				24,630		454,615	25,748
	\$	696,258				51,329		126,200	4,965
British Columbia.....	Quantity	218,603	14	12		53,437	58,352	550,499	24,417
	\$	1,354,459	377	658		218,480	638,945	164,411	6,220
Yukon.....	Quantity	11					2	29,318	669
	\$	1,056					200	16,597	537
Northwest Territories...	Quantity	6						28,859	147
	\$	507						14,271	75
Canada.....	Quantity	1,048,538	1,161,058	28,485	2,063	144,043	228,848	4,890,310	216,059
	\$	6,220,769	9,809,179	273,095	20,836	463,106	2,867,833	1,481,325	42,872
									1,273,340
									26,092

Table 26A.—Fuel and Electricity used only for Metallurgical

Province	Bituminous coal		Anthracite coal		Lignite and Sub-bituminous coal	Coke	Charcoal
	Canadian	Imported	From United States	From other Countries			
	Tons	Tons	Tons	Tons	Tons	Tons	Lb.
Quebec.....	Quantity	44,988	5,503			1,315	48,900
	\$	447,717	55,374			16,744	1,191
Ontario.....	Quantity		394,012			147,807	1,206,010
	\$		3,267,627			1,954,886	23,829
Manitoba.....	Quantity	10,946				11	
	\$	98,686				183	
Saskatchewan.....	Quantity	53,447				55	
	\$	481,822				893	
British Columbia.....	Quantity	93,140				57,820	5,124
	\$	583,154				633,988	298
Canada.....	Quantity	202,521	399,515			207,008	1,260,034
	\$	1,611,379	3,323,001			2,606,694	25,318

All used in the non-ferrous smelting and refining industry and included in table 26A.

Mineral Industry in Canada, by Provinces, 1946

Fuel oil and diesel oil	Wood	Gas		Other fuel	Electricity purchased	Total	Electricity generated for own use	Electricity generated for sale	Process supplies
		Manu- factured	Natural						
Imp. gal.	Cords	M cu.ft.	M cu. ft.	\$	K.W.H.	\$	K.W.H.	K.W.H.	\$
275,769	648	171,500			116,460,729		22,527,673	7,116,220	
29,622	2,730	24,697		584	1,343,914	2,838,118		71,162	5,004,329
63,466	13,803		41,916		3,302,303		1,090,392		
5,967	104,698		16,968		62,290	356,237			161,548
22,657,088	44,157	17,979			5,174,984,127		24,022,378	4,528,000	
1,674,104	326,160	8,416		383	12,561,514	19,229,955		14,630	16,718,190
15,218,907	34,258	96,342	241,949		1,468,123,764		22,523,636	88,500	
1,185,011	248,892	7,254	139,043		6,099,470	17,783,580		812	22,898,528
540,995	12,546				134,250,197		1,794,723	43,200	
68,237	96,563				443,161	1,369,533		437	1,636,413
3,028,297	472				344,044,725		2,618,499		
174,965	3,382				444,655	1,334,117			1,966,308
452,233	2,194	6,336,254			65,505,633		19,618,639	363,029	
39,118	9,003	888,893	1,850		723,552	2,541,168		33,325	3,153,161
4,109,266	15,913				760,233,252		89,825,342	5,437,857	
426,201	98,722			6,492	2,490,222	5,405,485		76,952	6,598,671
58,931	1,454						22,401,700	6,368,700	
27,398	20,007					65,795		27,726	19,991
405,600	3,691				3,358,284		14,511,578	4,196,139	
84,854	48,410				48,051	196,542		34,323	204,348
46,810,552	129,136	285,821	6,620,119		8,071,163,014		220,934,560	28,139,645	
3,715,477	958,567	40,367	1,044,904	9,309	24,216,829	51,190,560		259,367	58,361,487

Purposes in the Mineral Industry of Canada, by Provinces, 1946

Gasoline	Kerosene	Fuel oil and diesel oil	Wood	Gas		Other	Electricity	Total	Electricity generated own use
				Manu- factured	Natural				
Imp. gal.	Imp. gal.	Imp. gal.	Cords	M cu. ft.	M cu. ft.	\$	K.W.H.	\$	K.W.H.
7,765	922	16,551,298	670	8,979			4,440,092,261		
2,711	267	1,070,593	13,412	8,171			8,228,119	9,844,299	
34,561	5,967	12,070,023	131		422		175,556,777		
12,158	1,257	772,663	1,369		321		590,842	6,624,952	
		5,119	55				31,165,420		
		604	356				33,303	133,132	
		24,994	266				152,160,580		
		2,949	1,737				162,595	649,996	
112,829	2,014	836,027	508				491,517,798		
38,128	604	101,417	4,953				1,241,055	2,603,597	
155,155	8,903	29,487,461	1,630	8,979	422		5,290,492,836		
52,997	2,128	1,948,226	21,827	8,171	321		10,255,914	19,855,976	

Table 27.—Electricity Purchased by Canadian Mining Industry, 1936-1946

Year	Auriferous Quartz Mining (gold mines)		Total All Metal Mines (including non-ferrous smelters and refineries)		Total entire mining industry	
	K.W.H.	\$*	K.W.H.	\$*	K.W.H.	\$*
1936	449,026,003	4,345,066	2,841,045,187	10,783,296	3,151,192,519	14,055,915
1937	629,083,378	5,031,691	3,368,047,901	12,442,423	3,744,919,549	16,135,702
1938	741,866,953	5,333,427	4,125,037,129	13,917,618	4,441,098,287	17,485,652
1939	777,832,223	5,803,160	4,449,477,330	13,060,673	4,817,050,497	18,749,417
1940	868,846,323	5,803,562	5,105,497,931	17,005,546	5,569,961,386	21,066,734
1941	947,563,696	6,277,626	7,105,275,873	22,373,156	7,630,138,911	26,710,350
1942	846,900,417	5,856,971	9,626,254,575	29,004,724	10,186,657,256	33,614,088
1943	738,795,434	4,947,060	12,288,710,388	32,308,193	12,834,163,470	36,971,372
1944	709,437,980	4,668,292	12,392,717,185	27,100,576	12,917,130,002	31,940,718
1945	705,020,297	4,023,880	7,978,065,180	20,474,922	8,533,291,546	25,379,603
1946	765,985,551	4,422,732	7,434,349,687	18,794,641	8,071,163,014	24,216,829

* Includes service charges, for previous years see annual mineral production report for 1942.

Table 28.—Power Equipment in Use and Power Equipment in Reserve

ORDINARILY IN USE

Industry	Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers
METAL MINING										
Alluvial Gold Mines.....	No.		7	12	6	25		25	94	
	H.P.		773	215	15,685	16,673		16,673	3,906	
Auriferous Quartz Mines.....	No.	3	82	92	17	207	9,154	9,361	870	192
	H.P.	667	132	15,645	4,815	35,436	256,759	292,195	15,952	16,025
Copper-Gold Silver Mines.....	No.		1	18	11	36	2,698	2,734	597	33
	H.P.		1,341	5,070	398	8,900	15,709	120,576	18,659	4,273
Silver-Cobalt Mines.....	No.	1	6	2		9	61	70		3
	H.P.	100	735	170		1,005	1,640	2,645		169
Silver-Lead-Zinc Mines (a).....	No.	1	22	8	6	40	1,239	1,279	350	18
	H.P.	60	6,000	3,445	488	1,215	11,208	24,745	35,953	6,885
Nickel-Copper Mines.....	No.		2			2	916	918		6
	H.P.		180			180	42,658	42,838		430
Miscellaneous Metal Mines.....	No.		27	31		58	348	406		7
	H.P.		3,270	679		3,949	15,566	19,515		415
Non-Ferrous Smelting and Refining.....	No.	20	11	13		54	8,260	8,314	348	34
	H.P.	920	9,420	3,089	953	14,332	216,677	231,059	4,808	27,555
Total.....	No.	35	17	175	35	431	22,676	23,107	2,259	293
	H.P.	1,747	16,893	32,207	7,718	39,977	98,542	663,212	761,754	51,824
NON-METAL MINING, INCLUDING FUELS										
Coal.....	No.	122	11	29	234	2	398	3,441	472	199
	H.P.	32,625	18,799	1,899	4,928	12,000	70,251	126,291	196,542	46,817
Natural Gas.....	No.	4		2	269		276	96	371	32
	H.P.	140		600	9,466		10,206	1,069	11,275	495
Petroleum.....	No.	20	6	7	125		168	186	344	67
	H.P.	3,641	252	1,320	3,128		8,341	1,312	9,653	9
Total.....	No.	146	17	38	628	2	831	3,723	4,554	278
	H.P.	36,406	19,051	3,819	17,522	12,000	88,798	128,672	217,470	52,537
OTHER NON-METAL MINING										
Asbestos.....	No.	6	1	6	20		33	1,332	1,365	8
	H.P.	210	120	584	1,488		2,402	59,759	62,161	390
Feldspar, Nepheline Syenite and Quartz.....	No.	8		20	46		74	110	184	9
	H.P.	508		2,232	2,202		4,942	2,335	7,277	1,308
Gypsum.....	No.	5		36	36		77	114	191	37
	H.P.	1,140		5,028	2,762		8,930	3,818	12,748	1,205
Iron Oxides.....	No.		1				1	20	21	
	H.P.		100				100	125	225	
Mica.....	No.	2	1	10			13	49	63	3
	H.P.	75	315	317			707	636	1,343	670
Peat.....	No.	1	6	112		2	121	117	238	
	H.P.	30	291	3,698	50		4,069	1,705	5,774	
Salt.....	No.	14	15				29	172	201	282
	H.P.	1,375	1,945				3,320	1,042	4,362	2,659
Talc and Soapstone.....	No.		3	15			18	53	71	12
	H.P.		274	344			618	879	1,497	126
Miscellaneous.....	No.	2	18	20		3	43	383	426	18
	H.P.	20	2,013	1,064	658		3,755	6,559	10,314	1,660
Total.....	No.	38	16	91	259	5	409	2,350	2,759	603
	H.P.	3,358	2,065	10,837	11,875	708	28,843	76,858	105,701	9,887

or Idle, in the Mineral Industry in Canada, by Industries, 1946

IN RESERVE OR IDLE

Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers	Motor-generator sets in use and in reserve Total
1		5	6	2	14		14	264	1	10
15		163	67	50	295		295	1,670	15	257
12	2	46	106	1	167	1,348	1,515	190	43	507
992	90	7,832	6,976	780	16,670	29,499	46,169	3,898	2,276	20,079
	3	4	2		9	196	205	37	6	108
	1,000	1,085	245		2,330	3,927	6,257	2,034	882	10,194
										6
										545
		4	2	1	7	66	73	31	1	39
		620	305	50	975	2,241	3,216	787	30	5,300
			1		1	89	90		2	84
			60		60	4,172	4,232		190	32,417
			3		3	15	18			2
			111		111	1,159	1,270			13
2	8	5	9	11	35	3,017	3,052	50	16	215
2,574	11,929	1,075	1,055	42,082	58,715	73,585	132,306	3,209	15,065	118,714
15	13	64	129	15	236	4,731	4,967	572	69	971
3,581	13,019	10,775	8,819	42,962	79,166	114,583	193,739	11,598	18,458	187,519
										..
										..
										..
25	2	2	12		41	332	373	32	13	92
6,319	2,005	65	406		8,795	7,308	16,103	2,778	1,509	6,737
		1	2		3		3			4
		430	52		482		482			10
24	3		19		46	21	67		9	15
7,330	214		290		7,843	366	8,209		757	82
49	5	3	33		90	353	443	32	22	111
13,649	2,219	495	757		17,120	7,674	24,794	2,778	2,266	6,829
										..
										..
										..
			7		7	85	92		1	2
			77		77	4,659	4,736		50	310
			10		10	7	17	16	1	16
			882		882	137	1,019	99	5	333
2		3	6		11	14	25	6		5
215		105	211		531	341	872	305		268
										..
										..
										..
1			1		2	3	5		1	1
30			3		33	45	78		40	20
30		2	15		17	3	20		1	2
		140	454		594	24	618	110		10
						6	6	18	5	3
						58	58	236	785	1,343
						4	4			..
						320	320			..
3		4	4		11	31	42	24	6	6
95		860	430		1,385	505	1,890	440	243	266
										..
6		9	43		58	165	223	65	14	35
340		1,105	2,057		3,602	6,100	9,602	1,190	1,123	2,550

Table 28.—Power Equipment in Use and Power Equipment in Reserve or
ORDINARILY IN USE

Industry	Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS										
Cement.....No.			6	35		41	1,509	1,550	26	2
H.P.			1,276	1,037		2,313	77,687	80,000	983	250
Clay Products.....No.	40	1	11	67	17	136	623	759	31	50
H.P.	3,432	129	653	2,547	712	7,473	14,162	21,635	232	4,576
Lime.....No.	5		4	8	5	22	444	466	10	
H.P.	215		570	237	85	1,107	7,242	8,349	786	1,373
Sand and Gravel.....No.	17		25	83	7	139	290	432		6
H.P.	819		2,294	4,053	240	7,406	8,366	15,772		435
Stone.....No.	39	1	70	174	6	290	1,038	1,328	39	42
H.P.	1,676	2	6,030	6,561	280	14,649	27,116	41,665	1,116	2,005
Total.....No.	101	2	116	367	35	621	3,904	4,525	165	110
H.P.	6,142	131	10,823	14,435	1,317	32,848	134,573	167,421	3,117	8,639
Grand Total, 1946 No.	320	52	420	1,423	77	2,292	32,653	34,945	3,537	736
H.P.	47,653	38,140	57,686	51,550	54,002	249,031	1,003,315	1,252,346	82,771	122,887
Grand Total, 1945 No.	304	61	320	1,340	76	2,101	33,304	35,495	3,536	665
H.P.	65,694	46,523	44,004	46,841	81,129	284,191	1,007,288	1,291,479	88,881	122,217

Table 29.—Power Equipment in Use and Power Equipment in Reserve or
ORDINARILY IN USE

Province	Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers
Nova Scotia.....No.	44	9	40	49		142	1,089	1,231	215	85
H.P.	19,061	16,410	5,127	3,125		43,723	70,961	114,684	9,783	28,691
New Brunswick.....No.	12		8	50		70	319	389	5	19
H.P.	1,425		734	1,341		3,600	2,678	6,178	120	1,255
Quebec.....No.	35	9	119	288	8	459	10,042	10,501	491	167
H.P.	1,625	4,940	18,992	11,636	2,995	40,188	281,383	321,571	8,569	31,105
Ontario.....No.	86	17	111	528	5	747	13,465	14,212	638	197
H.P.	4,161	4,181	12,245	21,721	2,858	45,166	413,640	458,806	9,118	24,942
Manitoba.....No.	8	1	14	44		67	1,077	1,144	104	13
H.P.	340	500	1,476	746		3,062	35,062	38,124	1,426	2,495
Saskatchewan.....No.	14	1	23	48		86	1,877	1,963	153	23
H.P.	1,109	1,250	2,433	985		5,777	74,251	80,028	1,722	3,282
Alberta.....No.	99	10	25	245		379	2,088	2,467	373	174
H.P.	16,137	3,293	2,725	5,372		27,527	52,896	80,423	7,480	20,250
British Columbia.....No.	22	5	77	164		328	2,672	3,000	1,320	51
H.P.	3,795	7,566	13,367	6,589	28,449	59,766	70,871	130,637	38,012	10,182
Yukon.....No.			1		3	4		4	85	
H.P.			275		15,000	15,275		15,275	3,830	
N.W.T.....No.			2	7	1	10	74	84	153	7
H.P.			312	35	4,700	5,047	1,573	6,620	2,711	685
Canada.....No.	320	52	420	1,423	77	2,292	32,653	34,945	3,537	736
H.P.	47,653	38,140	57,686	51,550	54,002	249,031	1,003,315	1,252,346	82,771	122,887

Idle, in the Mineral Industry in Canada, by Industries 1946—Concluded

IN RESERVE OR IDLE

Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers	Motor-generator sets in use and in reserve Total
1			7		8	297	305	8	1	27
50			447		497	13,543	14,040	233	40	2,073
2			2		4	36	40		1	9
175			50		226	1,204	1,429		50	792
						29	29		5	
						553	553		347	
3		1	6		10	24	34		2	
215		70	188		473	678	1,151		150	
5	1	3	19	4	32	139	171	2	4	4
265	2	165	790	150	1,372	4,772	6,144	3	140	83
11	1	4	34	4	54	525	579	10	13	40
705	2	235	1,475	150	2,567	20,750	23,317	236	727	2,948
81	19	80	239	19	438	5,774	6,212	679	118	1,157
18,275	15,240	12,610	13,108	43,112	102,345	149,107	251,452	15,802	22,574	199,846
93	14	70	206	11	394	5,321	5,715	789	142	1,093
22,872	16,241	10,141	11,931	14,812	75,997	160,806	236,803	14,951	27,409	204,360

Idle, in the Mineral Industry in Canada, by Provinces, 1946

IN RESERVE OR IDLE

Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers	Motor-generator sets in use and in reserve Total
5		1	8		14	58	72	10	3	22
708		125	301		1,134	2,053	3,187	2,409	15	3,170
2					2	92	94	1		1
220					220	1,105	1,325	10		10
9	3	18	88	11	129	3,527	3,656	51	43	293
217	4,050	2,615	5,557	42,082	54,521	77,188	131,709	1,882	14,681	26,699
13	2	19	83		117	1,504	1,621	99	35	532
3,369	7	2,839	5,250		11,465	49,953	61,418	4,634	2,713	103,213
1	1	3	4		9	59	68	21	2	31
15	838	595	489		1,937	2,078	4,015	418	200	6,821
3	2	4	2		11	144	155	22	3	48
260	1,677	1,025	145		3,107	4,692	7,799	510	875	37,968
40	5	3	16		64	149	213	27	19	83
12,347	2,219	495	274		15,335	3,389	18,724	664	2,277	3,983
8	6	25	34	8	81	226	307	150	11	123
1,139	6,449	3,153	987	1,030	12,758	8,585	21,343	3,248	1,698	17,652
								264		8
								1,670		234
		7	4		11	15	26	34	2	16
		1,763	105		1,868	64	1,932	357	115	96
81	19	80	239	19	438	5,774	6,212	679	118	1,157
18,275	15,240	12,610	13,108	43,112	102,345	149,107	251,452	15,802	22,574	199,846

CHAPTER TWO

THE GOLD MINING INDUSTRY IN CANADA

Definition of the Industry.—Gold mining in Canada is classified into three principal industries—(a) the recovery of gold from the gravels and sands of stream channels or beaches or what is defined as “The Alluvial Gold Mining Industry”; (b) the recovery of lode gold, which is designated “The Auriferous Quartz Mining Industry” and in which industry gold is usually the most important economic constituent of the ores mined and quartz the predominant gangue mineral; (c) gold is often found in various other mineral deposits, more particularly in those of copper, and for this reason the review of Canada’s “Copper-Gold-Silver Mining Industry” is included here to complete a more comprehensive survey of Canadian gold production.

Production of fine gold in Canada during 1946 amounted to 2,832,554 troy ounces valued at \$104,096,359, showing an increase from the production of 2,692,727 troy ounces worth \$103,823,990 in 1945. The employment situation showed only slight improvement which might account for the increase in quantity of gold, but in July, 1946 the Canadian dollar was brought to parity with the United States dollar, thus lowering the price of gold from \$38.50 to \$35.00 per ounce. This price change had an adverse effect on the gold mining industry. Increased costs and limited supply of mining equipment retarded the development of many mines.

Ontario was the largest contributor to the gold production with 64 per cent, Quebec and British Columbia had 21·8 per cent and 4·8 per cent, respectively. The balance of the year’s output was made by Saskatchewan, Manitoba, Yukon, Northwest Territories, Nova Scotia and Alberta, in that order.

Gold yield according to the type of deposit or nature of recovery included: in crude gold bullion produced at “gold mines”, 80·91 per cent; in blister and anode copper, 13·48 per cent; in ores, matte, slags, etc. exported, 3·30 per cent; in alluvial gold, 2·15 per cent; and in base bullion at lead smelters, 0·16 per cent.

The cumulative total production of gold in Canada from 1858 to 1946 is 97,827,035 fine ounces valued at \$2,892,308,330 in Canadian funds.

The lifting of restrictions allowed development of ground previously explored by diamond drilling. The footage drilled on auriferous quartz deposits was 4,984,752, which was more than in the preceding year. During the latter part of the year diamond drilling activity declined very rapidly.

Table 30.—Production of New Gold in Canada, by Provinces and Sources, 1945 and 1946
(Gold at \$20.671834 per fine ounce)

	1945		1946	
	Fine troy ounces	\$	Fine troy ounces	\$
NOVA SCOTIA—				
In gold bullion.....	3,291	68,031	4,321	89,323
Estimated exchange equalization on gold produced.....		58,673		69,474
Total Value—Canadian Funds.....		126,704		158,797
QUEBEC—				
In gold bullion.....	419,673	8,675,411	410,642	8,488,723
In anode copper (b).....	225,443	4,660,320	197,471	4,082,088
In ores, etc., exported.....	16,492	340,920	10,226	211,390
Total.....	661,608	13,676,651	618,339	12,782,201
Estimated exchange equalization on gold produced.....		11,795,257		9,941,757
Total Value—Canadian Funds.....		25,471,908		22,723,958

Table 30.—Production of New Gold in Canada, by Provinces and Sources, 1945 and 1946
(Gold at \$20.671834 per fine ounce)
 —Concluded

	1945		1946	
	Fine troy ounces	\$	Fine troy ounces	\$
ONTARIO—				
(c) Porcupine area—In gold bullion.....	830,909	17,176,413	904,975	18,707,493
(c) Kirkland Lake—In gold bullion (a).....	479,346	9,908,961	549,068	11,350,243
(c) Other gold mines—In gold bullion.....	223,744	4,625,199	291,371	6,023,173
In converter copper from nickel-copper ores.....	44,544	920,806	34,413	711,380
In ores, matte, etc., exported.....	46,825	967,958	33,506	692,630
Total.....	1,625,368	33,599,337	1,813,333	37,484,919
Estimated exchange equalization on gold produced.....		28,977,331		29,155,069
Total Value—Canadian Funds.....		62,576,668		66,639,988
MANITOBA—				
In gold bullion.....	38,326	792,268	43,819	905,819
In blister copper.....	32,329	668,300	35,583	735,566
In ores, etc., exported.....				
Total.....	70,655	1,460,568	79,402	1,641,385
Estimated exchange equalization on gold produced.....		1,259,650		1,276,639
Total Value—Canadian Funds.....		2,720,218		2,918,024
SASKATCHEWAN—				
In alluvial gold.....			2	41
In gold bullion.....				
In blister copper.....	108,568	2,244,300	112,099	2,317,292
Total.....	108,568	2,244,300	112,101	2,317,333
Estimated exchange equalization on gold produced.....		1,935,568		1,802,379
Total Value—Canadian Funds.....		4,179,868		4,119,712
ALBERTA—				
In alluvial gold.....	7	145	110	2,274
Estimated exchange equalization on gold produced.....		124		1,768
Total Value—Canadian Funds.....		269		4,042
BRITISH COLUMBIA—				
In alluvial gold.....	10,071	208,186	15,530	321,033
In gold bullion.....	88,261	1,824,517	66,509	1,374,863
In base bullion.....	2,323	48,021	4,474	92,486
In ores, etc., exported.....	86,199	1,781,891	49,729	1,027,990
Total.....	186,854	3,862,615	136,242	2,816,372
Estimated exchange equalization on gold produced.....		3,331,264		2,190,521
Total Value—Canadian Funds.....		7,193,879		5,006,893
YUKON—				
In alluvial gold.....	31,721	655,731	45,283	936,083
In ores exported.....			3	62
Total.....	31,721	655,731	45,286	936,145
Estimated exchange equalization on gold produced.....		565,527		728,115
Total Value—Canadian Funds.....		1,221,258		1,664,260
NORTHWEST TERRITORIES—				
In ores, etc., shipped.....				
In gold bullion produced.....	8,655	178,915	23,420	484,134
Total.....	8,655	178,915	23,420	484,134
Estimated exchange equalization on gold produced.....		154,303		376,551
Total Value—Canadian Funds.....		333,218		860,685
Total for Canada.....	2,696,727	55,746,293	2,832,554	58,554,086
Total Estimated Exchange Equalization on Gold Produced.....		48,077,697		45,542,273
Grand Total Value, Including Exchange.....		103,823,990		104,096,359

NOTE.—The estimated average price of a troy ounce of fine gold in Canadian funds was \$38.50 in 1945 and \$36.75 in 1946.

(a) Includes production of Larder Lake area.

(b) Includes a considerable quantity of gold recovered from gold ores.

(c) Includes certain quantities of gold contained in slags, ores, etc., shipped to Canadian and foreign smelters.

Table 31.—Production (*) of Gold from Auriferous Quartz and Base Metal Mines, by Months, 1946 and 1947

Month	Gold production from base metal mines		Gold production from auriferous quartz mines and placer deposits	
	1946	1947	1946	1947
	(fine ounces)			
January.....	39,241	17,306	199,261	216,831
February.....	38,168	15,586	191,320	207,431
March.....	43,099	28,281	205,209	235,588
April.....	40,880	25,119	197,724	229,770
May.....	36,321	29,863	204,381	239,047
June.....	27,347	31,080	207,156	238,018
July.....	36,110	27,713	203,473	233,684
August.....	33,358	29,590	197,793	231,301
September.....	31,708	27,869	198,258	219,774
October.....	31,814	28,782	209,189	229,983
November.....	28,120	24,676	203,185	227,498
December.....	15,523	.....	213,916	.....
Total.....	401,689	.....	2,430,865	.....

* 1947 data are not adjusted to final totals for year.

Table 32.—Total (Cumulative) Recorded Production in Canada of Specified Metals to December 31, 1946

—	Since	Unit of measure	Quantity	Value
				\$
Gold.....	1858	fine ounces	97,827,035	2,892,308,330
Silver.....	1887	fine ounces	906,408,934	511,142,131
Copper.....	1886	pounds	10,565,231,970	1,243,135,303
Nickel.....	1889	pounds	4,619,278,412	1,244,159,172
Lead.....	1887	pounds	9,267,891,835	409,676,278
Zinc.....	1898	.....	.....	350,597,787
Cobalt.....	1904	pounds	34,600,409	33,887,158

Table 33.—Production of Gold and Silver in Canada by Principal Mines, 1946

Property and Province	Ore hoisted	Material sorted (discarded)	Ore treated	Gold produced	Silver produced	Mill capacity 24 hours	See footnotes
	tons	tons	tons	fine oz.	fine oz.	tons	
NOVA SCOTIA—							
Consolidated Mining & Smelting Co. of Canada Ltd.....	9,601	.....	9,601	3,289	115	40	(a)
Queens Mines Limited.....	5,399	.....	5,399	840	22	120	(a)
Total Nova Scotia.....				4,321	.....	.....	(g)
QUEBEC—							
Bellefleur Quebec Mines Ltd..	140,589	17,722	122,867	40,102	4,665	350	(c)
Canadian Malartic Gold Mines Limited.....	317,026	.....	317,026	34,664	30,558	1,000	(c)
Consolidated Beattie Mines Limited.....	74,045	.....	107,421	8,929	812	1,800	(c)
East Malartic Mines Limited..	307,461	.....	307,461	43,623	11,916	1,500	(c)
Eder Mines Limited.....	23,401	.....	.....	601	.....	.....	(b)
Francœur Gold Mines Ltd.....	73,427	.....	19,820	9,988	447	.....	(b)
Lamaque Mining Co. Ltd.....	145,315	.....	145,315	36,687	6,436	1,200	(c)
Malartic Gold Fields Ltd.....	208,354	.....	208,354	37,845	1,293	750	(c)
Mic-Mac Mines Limited.....	174,652	.....	174,784	24,731	5,937	650	(a)
O'Brien Gold Mines Limited..	51,167	.....	51,050	22,681	1,430	190	(a) (c)
Perron Gold Mines Limited..	117,081	3,195	113,740	19,607	1,654	400	(c)
Powell Rouyn Gold Mines Limited.....	87,809	.....	.....	10,246	.....	450	(b)
Senator-Rouyn Limited.....	95,596	.....	92,759	12,877	1,136	300	(c)
Sigma Mines (Quebec) Ltd....	299,236	.....	299,236	49,674	9,744	1,100	(c)
Siscoe Gold Mines Ltd.....	157,791	.....	157,791	22,799	2,308	270	(a) (c)
Sladen-Malartic Mines Ltd....	181,701	.....	181,557	16,274	11,555	700	(c)

For footnotes, see end of table, p. 128.

Table 33.—Production of Gold and Silver in Canada by Principal Mines, 1946—Continued

Property and Province	Ore hoisted	Material sorted (discarded)	Ore treated	Gold produced	Silver produced	Mill capacity 24 hours	See footnotes
	tons	tons	tons	fine oz.	fine oz.	tons	
QUEBEC—Con.							
Stadacona Rouyn Mines Ltd.	123,877		123,877	21,721	4,416	500	(c)
Sullivan Consolidated	139,995	19,056	120,939	26,706	6,958	500	(c)
West Malartic Mines Ltd.	3,274		3,274	482	34	300	(c)
Total Principal Gold Mines				440,237	101,299		
Copper-gold-silver and other ores				178,102			
Total Quebec				618,339			
ONTARIO—							
<i>Porcupine District</i>							
Aunor Gold Mines Ltd.	167,705		167,705	56,712	4,499	300	(c)
Bonetal Gold Mines Ltd.	29,019	2,321	26,698	4,674	467		(d)
Broulan Porcupine Mines Ltd.	84,931	9,140	75,791	15,850	1,538	350	(c)
Buffalo Ankerite Gold Mines Ltd.	234,379		234,379	37,873	3,355	1,300	(c)
Coniaurum Mines Ltd.	114,385		114,385	28,114	5,837	500	(c)
Delnite Mines Ltd.	92,600		92,731	17,171	1,426	520	(c)
Dome Mines Ltd.	573,400		573,400	147,649	34,543	1,700	(c)
Hallnor Mines Ltd.	112,357		112,357	52,519	3,954	400	(c)
Hollinger Cons. Gold Mines Ltd. (Timmins)	1,045,601		1,048,646	250,075	48,140	3,900	(c)
Hollinger Cons. Gold Mines Ltd. (Ross)	70,236		70,309	12,981	39,171	300	(c)
Hoyle Mining Co. Ltd.	72,779	4,827	67,952	5,382			(e)
McIntyre Porcupine Mines Ltd.	614,138		613,200	168,587	34,398	2,400	(c)
Pamour Porcupine Mines Ltd.	386,686		386,686	35,447	6,032	1,600	(c)
Paymaster Cons. Mines Ltd.	151,432		140,015	31,158	9,677	600	(c)
Preston East Dome Mines Ltd.	231,259		230,899	40,604	4,952	1,000	(a) (c)
<i>Kirkland Lake District</i>							
Bidgood Kirkland Gold Mines Ltd.	27,634		27,634	7,381	2,311	125	(c)
Kirkland Lake Gold Mining Co. Ltd.	91,443		91,443	29,876	3,404	400	(c)
Lake Shore Mines Ltd.	310,968		310,968	128,094	35,073	2,300	(c)
Macassa Mines Ltd.	87,383		87,383	35,931	7,071	400	(c)
Sylvanite	154,765		154,562	45,740	8,942	600	(c)
The Teck-Hughes Gold Mines Ltd.	91,302		91,302	29,831	3,572	600	(c)
Toburn Gold Mines Ltd.	40,753		40,753	13,071	4,040	175	(c)
Upper Canada	99,431		99,431	28,521	11,145	300	(c)
Wright Hargreaves Mines Ltd.	174,314		174,314	85,143	16,742	1,200	(c)
<i>Larder Lake District</i>							
Chesterville Larder Lake Gold Mining Ltd.	225,458		225,458	28,078	1,481	700	(c)
Kerr-Addison Gold Mines Ltd.	531,815		531,695	105,483	5,975	2,100	(c)
Omega Gold Mines Ltd.	104,925		104,925	11,768	1,515	500	(c)
<i>Matachewan District</i>							
Hollinger Cons. Gold Mines Ltd. (Young-Davidson)	207,444		208,619	18,533	4,110	1,050	(c)
Matachewan Consolidated Mines Ltd.	223,090		222,890	24,169	9,663	1,000	(c)
<i>Thunder Bay District</i>							
Hard Rock Gold Mines Ltd.	144,378	41,612	102,766	19,581	293	450	(c)
Leitch Gold Mines Ltd.	34,585	4,879	28,692	24,319	759	90	(a) (c)
Little Long Lac Gold Mines Ltd.	77,664	9,814	67,850	19,702	1,665	300	(a) (c)
MacLeod-Cockshutt Gold Mines Ltd.	224,631	66,197	158,434	32,870	723	650	(c)
Magnet Consolidated Mines Ltd.	26,018		26,018	9,448	985	150	(a) (c)
Maylac Gold Mines Ltd.	989	228	761	588	34		
<i>Patricia District</i>							
Berens River Mines Ltd.	41,925		41,925	9,776	507,866	225	(f)
Central Patricia Gold Mines Ltd.	97,808		97,808	32,622	3,195	400	(c)
Cochenour Willans Gold Mines Ltd.	61,526		59,570	21,898	623	50	(a) (c)

For footnotes, see end of table, p. 128.

Table 33.—Production of Gold and Silver in Canada by Principal Mines, 1946—Concluded

Property and Province	Ore hoisted	Material sorted (discarded)	Ore treated	Gold produced	Silver produced	Mill capacity 24 hours	See footnotes
	tons	tons	tons	fine oz.	fine oz.	tons	
ONTARIO—Conc.							
Hasaga Gold Mines Ltd.....	106,132	23,958	82,427	7,973	3,295	350	(c)
Jason Mines Ltd.....	11,549	1,437	9,956	2,221	264	135	(a) (c)
Madsen Red Lake Gold Mines Ltd.....	121,649		121,649	29,751	6,741	400	(a) (c)
McKenzie Red Lake Gold Mines Ltd.....	79,660	10,459	69,201	16,217	6,297	250	(c)
Pickle Crow Gold Mines Ltd..	73,990	880	73,209	37,664	4,944	400	(a) (c)
Total Principal Gold Mines.....				1,761,045	850,717		
Nickel-copper and other mines.....				52,288			
Total Ontario.....				1,813,333			
MANITOBA—							
San Antonio Gold Mines Ltd..	150,335		149,875	43,819	6,621	550	(a) (c)
Copper-gold-silver ores.....				35,583			
Total Manitoba.....				79,402			
SASKATCHEWAN—							
Copper-gold-silver and alluvial ores.....				112,101			
ALBERTA—							
Placer gold.....				110			
BRITISH COLUMBIA—							
Bralorne Mines Ltd.....	69,526	4,992	64,534	31,432	8,552	500	(a)
Cariboo Gold Quartz Mining Co. Ltd.....	45,224		45,224	14,092	1,179	350	(c)
Hedley Mascot Gold Mines Ltd.....	32,448		32,448	9,050	2,263	225	(c)
Island Mountain Mines Co. Ltd.....	20,807		20,807	9,298	1,249	150	(c)
Kelowna Exploration Co. Ltd..	46,494		46,494	18,491	908	275	(c)
Polaris-Taku Mining Co. Ltd..	25,724		25,724	3,276	143	300	(f)
Pioneer Gold Mines of B.C. Ltd.....	13,706	1,161	12,175	5,896	1,008	400	(a) (c)
Privateer Mine Ltd.....	7,045	3,484	3,661	1,801	833	90	(c)
Reno Gold Mines Ltd.....	3,843	1,185	2,658	872	612	50	(a) (f)
Sheep Creek Gold Mines Ltd..	18,208		18,208	5,678	1,457	150	(c)
Silbak Premier Mines Ltd.....	34,804		34,804	8,163	38,066	500	(f)
Total Principal Gold Mines.....				108,049	56,330		
Placer gold.....				15,539			
Copper-gold and other ores.....				12,663			
Total British Columbia.....				136,242			
YUKON—							
Placers.....				45,286	9,416		(a)
NORTHWEST TERRITORIES—							
Negus Mines Ltd.....	27,287	2,790	24,419	(g) 15,772	(g) 4,061	65	(a) (c)
Cons. Mining & Smelting Co. Ltd.....	19,918		19,918	7,648	2,051	350	(a) (c)
Total Northwest Territories.....				23,420			
TOTAL CANADA.....				2,832,554			

(a) Amalgamation process.

(b) Shipped to smelter.

(c) Cyanidation.

(d) Shipped to Broulan mill.

(e) Shipped to Pamour Porcupine.

(f) Flotation process concentrates exported.

(g) Receipts at Royal Canadian Mint.

Table 34.—Production of New Gold* by Provinces and Territories, 1937-1946

Year	Nova Scotia		Quebec		Ontario		Manitoba	
	Fine ounces	\$	Fine ounces	\$	Fine ounces	\$	Fine ounces	\$
1937.....	19,918	696,931	711,480	24,894,685	2,587,095	90,522,454	157,949	5,526,636
1938.....	26,560	934,248	881,263	30,998,426	2,896,477	101,883,578	185,706	6,532,209
1939.....	29,943	1,082,170	953,377	34,455,998	3,086,076	111,533,873	180,875	6,537,003
1940.....	22,219	855,432	1,019,175	39,238,238	3,261,688	125,574,988	152,295	5,863,357
1941.....	19,170	738,045	1,089,339	41,939,552	3,194,308	122,980,858	150,553	5,796,290
1942.....	12,989	500,076	1,092,388	42,056,938	2,763,819	106,407,032	136,226	5,244,701
1943.....	4,129	158,967	922,533	35,517,521	2,117,215	81,512,777	91,775	3,533,337
1944.....	5,840	224,840	746,784	28,751,184	1,731,836	66,675,686	74,168	2,855,468
1945.....	3,291	126,704	661,608	25,471,908	1,625,368	62,576,668	70,655	2,720,218
1946.....	4,321	158,797	618,339	22,723,958	1,813,333	66,639,988	79,402	2,918,024
Total.....	148,380	5,476,210	8,696,286	326,048,408	25,077,215	936,307,902	1,279,604	47,527,243
	Saskatchewan		British Columbia		Yukon		Northwest Territories	
1937.....	65,886	2,305,351	505,857	17,699,936	47,982	1,678,890	.....	.....
1938.....	50,021	1,759,489	605,617	21,302,578	72,368	2,545,544	6,800	239,190
1939.....	77,120	2,787,194	626,970	22,659,323	87,745	3,171,192	51,914	1,876,224
1940.....	102,925	3,962,613	617,011	23,754,924	80,458	3,097,633	55,159	2,123,621
1941.....	138,015	5,313,578	608,203	23,415,816	70,959	2,731,922	74,417	2,865,054
1942.....	178,871	6,886,533	474,339	18,262,052	83,246	3,204,971	99,394	3,826,669
1943.....	174,090	6,702,465	241,346	9,291,821	41,160	1,584,660	59,032	2,272,732
1944.....	122,782	4,727,107	196,857	7,578,994	23,818	916,993	20,775	799,838
1945.....	108,568	4,179,868	186,854	7,193,879	31,721	1,221,258	8,655	333,218
1946.....	112,101	4,119,712	136,242	5,006,893	45,286	1,664,260	23,420	860,685
Total.....	1,130,379	42,743,910	4,199,296	156,166,216	584,743	21,817,323	399,566	15,197,231

* From all sources.

Table 35.—Gold Recovered in Canada According to Nature of Ore, by Provinces, 1942-1946

Year and Province	Placer gold	Auriferous quartz ores†	Copper-gold-silver ores	Nickel-copper ores	Silver-lead and other ores	Total
	oz.	oz.	oz.	oz.	oz.	oz.
1942						
Nova Scotia.....		12,989				12,989
Quebec.....		811,714	280,580		94	1,092,388
Ontario.....		2,692,828		70,861	130	2,763,819
Manitoba.....		85,193	51,033			136,226
Saskatchewan.....	9	15,141	163,721			178,871
Alberta.....	34					34
British Columbia.....	26,323	418,048	19,892		10,076	474,339
Northwest Territories.....		99,394				99,394
Yukon.....	83,198				48	83,246
Total Canada.....	109,564	4,135,307	515,226	70,861	10,348	4,841,306
1943						
Nova Scotia.....		4,129				4,129
Quebec.....		625,429	284,112		12,992*	922,533
Ontario.....		2,061,376	1	55,776	62	2,117,215
Manitoba.....		62,254	29,521			91,775
Saskatchewan.....		4	174,086			174,090
Alberta.....	21					21
British Columbia.....	11,680	205,850	18,137		5,679	241,346
Northwest Territories.....		59,032				59,032
Yukon.....	41,157				3	41,160
Total Canada.....	52,858	3,018,074	505,857	55,776	18,736	3,651,301
1944						
Nova Scotia.....		5,840				5,840
Quebec.....		522,894	209,989		13,901*	746,784
Ontario.....		1,676,486		55,286	64	1,731,836
Manitoba.....		40,669	33,499			74,168
Saskatchewan.....	5		122,777			122,782
Alberta.....	51					51
British Columbia.....	9,402	169,132	14,852		3,471	196,857
Northwest Territories.....		20,775				20,775
Yukon.....	23,816				2	23,818
Total Canada.....	33,274	2,435,796	381,117	55,286	17,438	2,922,911
1945						
Nova Scotia.....		3,291				3,291
Quebec.....		434,784	212,146		14,678*	661,608
Ontario.....		1,532,715	44,544	48,109		1,625,368
Manitoba.....		38,326	32,329			70,655
Saskatchewan.....			108,568			108,568
Alberta.....	7					7
British Columbia.....	10,071	161,980	12,453		2,370	186,854
Northwest Territories.....		8,655				8,655
Yukon.....	31,721					31,721
Total Canada.....	41,799	2,179,731	410,040	48,109	17,048	2,696,727
1946						
Nova Scotia.....		4,321				4,321
Quebec.....		440,263	167,850		10,226*	618,339
Ontario.....		1,761,717		51,490	126	1,813,333
Manitoba.....		43,819	35,583			79,402
Saskatchewan.....	2		112,099			112,101
Alberta.....	110					110
British Columbia.....	15,530	108,944	7,287		4,481	136,242
Northwest Territories.....		23,420				23,420
Yukon.....	45,283				3	45,286
Total Canada.....	60,925	2,382,484	322,819	51,490	14,836	2,832,554

* Contains a relatively small quantity of gold recovered from certain complex ores (lead, copper, etc.), which are difficult to classify.

† Includes production of Golden Manitou mine which was classified prior to 1943 as auriferous quartz.

Table 36.—Canadian Gold Production According to Method of Computation and Recovery, 1932-1946

Year	In alluvial gold	In crude gold bullion produced at mines (a)	In base bullion produced at lead smelters	In blister and anode copper produced (b)	In ores matte, slags, etc., exported	Total gold produced
	%	%	%	%	%	fine oz.
1932.....	1.8	79.3	1.0	15.1	2.8	3,044,387
1933.....	2.0	79.8	0.7	14.2	3.3	2,949,309
1934.....	2.0	78.7	1.1	13.4	4.8	2,972,074
1935.....	1.8	78.3	2.2	13.2	3.9	3,284,890
1936.....	2.2	77.4	1.6	13.8	5.0	3,745,028
1937.....	2.2	80.2	0.9	11.7	5.0	4,096,213
1938.....	2.5	80.8	0.9	11.2	4.5	4,725,117
1939.....	2.5	82.1	0.6	10.4	4.4	5,094,370
1940.....	2.1	82.7	0.6	10.0	4.6	5,311,145
1941.....	2.0	82.6	0.4	10.3	4.7	5,345,179
1942.....	2.3	80.8	0.2	12.1	4.6	4,841,306
1943.....	1.45	78.71	0.19	15.61	4.04	2,651,301
1944.....	1.14	78.98	0.12	15.41	4.35	2,932,911
1945.....	1.55	76.77	0.09	15.30	6.29	2,696,727
1946.....	2.15	80.91	0.16	13.48	3.30	2,832,554

(a) Includes a relatively small quantity of gold contained in shipments of gold ores, slags, etc. to Canadian smelters.

(b) Canadian blister copper is sometimes refined in the United States; also contains a relatively small quantity of gold recovered from auriferous quartz ores.

Table 37.—Production of Gold in Canada, by Months*, 1944-1946 (Fine Ounces)

Month	1944	1945	1946	Month	1944	1945	1946
January.....	258,607	237,210	238,502	July.....	236,362	213,815	239,583
February.....	257,613	215,993	229,488	August.....	237,617	215,386	231,151
March.....	267,485	232,610	248,308	September.....	237,151	215,157	229,966
April.....	245,577	227,575	238,604	October.....	230,749	233,487	241,003
May.....	257,647	221,288	240,702	November.....	223,806	224,542	231,305
June.....	240,673	215,802	234,503	December.....	229,624	243,862	229,439

* Compiled from monthly reports received from principal operators and the totals were adjusted to agree with the 12 months' total as compiled from final annual reports; production includes recoveries from all types of ore.

Table 38.—Precious Metals Consumed by the Jewellery and Silverware Industry in Canada, 1944 and 1945

Material	Cost at works	
	1944	1945
	\$	\$
Fine gold.....	3,665,017	4,467,387
Gold alloys.....	826,199	775,026
Fine silver.....	1,749,154	2,449,548
Silver alloys.....	1,014,775	1,344,989
Platinum.....	150,966	360,655
Old gold, jewellers' findings, waste and scrap for refining.....	1,379,536	1,228,148
Gold-filled wire and stock.....	349,871	395,526
Precious and semi-precious stones.....	1,252,769	1,459,821

Table 39.—Gold Production of the World (a)—(In Fine Ounces)—1940, 1943 and 1946
(Taken from American Bureau of Metal Statistics)

Country	1940	1943	1946
NORTH AMERICA—			
United States.....	5,919,928	1,365,223	1,625,431
Canada.....	5,311,145	3,651,301	2,828,404
Mexico.....	883,096	634,752	417,950
Newfoundland.....	22,000	18,735	15,751
Total North America.....	12,136,169	5,670,011	4,887,536
CENTRAL AMERICA AND WEST INDIES.....	287,296	302,300	250,000
SOUTH AMERICA—			
Brazil.....	264,311	191,300	170,000
Chile.....	335,424	173,745	230,517
Columbia.....	631,926	565,501	437,176
Ecuador.....	71,217	90,691	72,500
Peru.....	281,248	199,638	173,000
Guinea—British.....	15,745	19,470	25,000
Dutch.....	15,921	5,795	6,000
French.....	32,568	20,608	21,000
Venezuela.....	146,800	62,802	50,000
Other South America.....	30,000	30,000	20,000
Total South America.....	1,845,161	1,359,550	1,205,193
EUROPE.....	600,000	450,000	450,000
OCEANIA—			
New South Wales.....	89,839	63,779	31,000
Queensland.....	126,831	62,838	50,000
Victoria.....	163,662	56,511	86,993
Western Australia.....	1,191,481	546,470	616,962
Tasmania.....	19,171	17,245	15,400
New Guinea.....	294,795	.....	.....
New Zealand.....	185,665	149,150	102,000
Fiji.....	111,300	64,420	72,000
Other Oceania (c).....	46,538	4,436	5,000
ASIA—BRITISH INDIA.....	289,357	252,353	131,000
AFRICA—			
Belgian Congo.....	554,652	443,481	320,000
French West Africa.....	73,576	80,296	76,000
Kenya.....	77,243	45,118	40,000
Madagascar.....	11,574	9,163	7,000
Rhodesia.....	842,266	657,387	544,848
British West Africa (b).....	939,223	586,013	595,000
Tanganyika.....	142,074	69,741	48,300
Transvaal Cape Colony and Natal.....	14,037,741	12,800,021	11,917,914
Totals for World (d).....	34,065,614	23,690,283	21,452,141

(a) In compiling this table, free use has been made of the reports of the United States Director of the Mint. Production of the Philippine Islands is included with the United States in this table.

(b) Comprising Gold Coast, Sierra Leone and Nigeria.

(c) Includes Papua.

(d) Outside of Russia, Japan and Asiatic countries, except British India. Unknown production of U.S.S.R., Japan and other countries in Asia have been omitted. In 1940-41 these omissions accounted for about 6,700,000 ounces, and for subsequent years probably decreased to about 5,500,000 ounces. This will enable anyone to continue an estimational line of figures if it be desired to do so.

Table 40.—Gold Production for the World Since the Discovery of America

Year	Russia (a)	Transvaal since the commencement of fields (i)	United States (f) (a)	Canada since the recording of production in 1858	World since the discovery of America (a)
	fine ounces	fine ounces	fine ounces	fine ounces	fine ounces
1493-1600.....					24,266,820
1601-1700.....					29,330,445
1701-1800.....					61,088,215
1801-1840.....					20,488,552
1841-1850.....			(c) 1,187,170		17,605,018
1851-1860.....				220,039	64,482,933
1861-1870.....			(d) 58,279,778	1,477,999	61,098,343
1871-1880.....			(e) 15,281,264	904,093	55,670,618
1881-1890.....		1,070,651	15,808,339	584,102	51,280,184
1891-1895.....		6,870,158	9,106,834	291,564	39,412,823
1896-1900.....		12,578,869	15,728,572	3,469,791	62,234,698
1901-1905.....		13,632,908	19,393,722	4,592,261	78,033,650
1906.....		5,792,823		556,415	19,471,080
1907.....		6,450,740		405,517	19,977,260
1908.....		7,056,266	22,993,218	476,112	21,422,244
1909.....		7,295,108		453,865	21,965,111
1910.....		7,527,108		493,707	22,022,180
1911.....		8,249,461	4,687,053	473,159	22,397,136
1912.....		9,107,512	4,520,719	611,885	22,605,068
1913.....	(g) 1,583,677	8,798,336	4,299,784	802,973	22,556,347
1914.....	1,733,914	8,394,322	4,572,976	773,178	21,652,883
1915.....	1,382,450	9,093,902	4,887,604	918,056	22,846,608
1916.....	1,089,885	9,296,618	4,479,057	930,492	22,032,542
1917.....	871,265	9,018,084	4,051,440	738,831	20,346,043
1918.....	554,558	8,418,292	3,320,784	699,681	18,588,127
1919.....	173,610	8,331,294	2,918,628	766,764	17,339,679
1920.....	73,945	8,155,226	2,476,166	765,007	16,146,830
1921.....	65,907	8,128,681	2,422,006	926,329	15,997,692
1922.....	191,614	7,009,767	2,363,075	1,263,364	15,496,859
1923.....	305,425	9,148,771	2,502,632	1,233,341	17,845,349
1924.....	546,550	9,574,918	2,528,900	1,525,382	18,619,481
1925.....	632,390	9,597,573	2,411,987	1,735,735	18,673,178
1926.....	760,605	9,954,762	2,335,042	1,754,228	19,117,568
1927.....	688,492	10,122,459	2,197,125	1,754,228	19,058,736
1928.....	385,800	10,354,157	2,233,251	1,890,592	18,885,849
1929.....	707,300	10,412,326	2,208,386	1,928,308	19,207,452
1930.....	1,501,083	10,716,349	2,285,603	2,102,068	20,903,736
1931.....	1,655,725	10,877,708	2,395,878	2,693,892	22,284,200
1932.....	1,938,000	11,557,858	2,449,032	3,044,387	24,098,676
1933.....	2,700,000	11,012,340	2,556,246	2,949,309	25,400,295
1934.....	3,858,000	10,479,194	3,091,183	2,972,074	27,372,374
1935.....	4,784,030	10,773,041	3,609,283	3,284,890	29,999,245
1936.....	(h) 6,500,000	11,335,092	4,357,394	3,748,028	32,930,554
1937.....	(h) 5,900,000	11,734,553	4,804,540	4,096,213	35,118,298
1938.....	(h) 5,800,000	12,161,375	5,089,811	4,725,117	37,703,334
1939.....	(h) 5,000,000	12,821,061	5,611,171	5,094,379	39,534,430
1940.....	(h) 4,000,000	14,037,741	(j) 6,003,105	5,311,145	41,067,101
1941.....	(b) 4,386,361	14,120,617	(l) 5,976,419	5,345,179	(k) 40,332,204
1942.....	(b) 12,800,021	12,277,228	(n) 3,741,806	4,841,306	(m) (k) 36,000,000
1943.....	(b) 12,213,545	11,027,165	(q) 1,394,522	3,651,301	(o)
1944.....	(b) 12,213,545		(p) 1,002,238	2,922,911	(o)
1945.....	(b) 12,213,545			2,696,727	(o)
1946.....	(b) 12,213,545			2,828,404	(o)

(a) Supplied by United States Mint.

(b) Not available.

(c) 1792-1847.

(d) 1848-1872.

(e) 1873-1880.

(f) Including Philippine Islands production received in United States. Data represent receipts at United States Mint's refineries assay offices.

(g) Data not available for preceding years. A revision by the United States Mint of estimated Russian gold production for the years 1913 to 1934 was made from United States consular reports, based principally on Soviet publications. While available data are quite indefinite and, in many instances, contradictory, it is believed that this revision more nearly represents actual production than data heretofore used. Figures for Russian production since 1937 supplied by American Bureau of Metal Statistics.

(h) Subject to revision. American Bureau of Metal Statistics.

(i) Annual Report—Department of Mines, Union of South Africa. 1941 to 1944 figures, Transvaal Chamber of Mines.

(j) Includes 1,140,126 fine ounces received from Philippines.

(k) Includes conjectural data for Russia.

(l) Includes 1,144,332 fine ounces from Philippine Islands.

(m) The Mining Journal, London—subject to revision.

(n) Includes 158,726 ounces received from Philippine Islands.

(o) Omitted due to incomplete data.

(p) American Bureau of Metal Statistics—preliminary.

(q) Includes 13,764 ounces received from Philippine Islands.

Table 41.—Estimated Average Monthly Value of an Ounce of Fine Gold, Expressed in Canadian Funds, 1932-1946

Month	1932	1933	1934	1935	1936	1937	1938	1939	1940-1945	1946
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
January.....	24.24	23.64	33.05	34.95	35.06	35.01	34.99	35.30	38.50	38.50
February.....	23.67	24.74	35.29	35.05	35.18	35.01	35.00	35.19	38.50	38.50
March.....	23.11	24.78	35.08	35.40	35.11	34.98	35.05	35.13	38.50	38.50
April.....	22.98	25.33	34.93	35.18	35.13	34.95	35.15	35.15	38.50	38.50
May.....	23.38	27.75	34.94	34.95	35.00	34.94	35.22	35.13	38.50	38.50
June.....	23.83	28.24	34.73	35.05	35.09	35.02	35.36	35.07	38.50	38.50
July.....	23.73	30.58	34.59	35.08	34.91	35.05	35.24	35.06	38.50	35.35
August.....	23.61	30.09	34.19	35.09	35.00	35.00	35.12	35.01	38.50	35.00
September.....	22.88	31.79	34.18	35.28	34.99	35.00	35.12	37.21	38.50	35.00
October.....	22.65	31.48	34.27	35.49	34.99	34.99	35.32	38.43	38.50	35.00
November.....	23.73	32.68	34.16	35.37	34.95	34.98	35.25	38.50	38.50	35.00
December.....	23.85	32.14	34.57	35.33	34.98	34.93	35.28	38.50	38.50	35.00
Yearly average.....	23.47	28.60	34.50	35.19	35.03	34.99	35.17	36.14	38.50	36.75

NOTE.—Procedure regarding the marketing of gold by the Department of Finance, Ottawa, is noted elsewhere in this report. At December 31, 1944 the price paid by the United States Treasury for gold purchased by the Mints continued at \$35 per troy ounce of fine gold, less $\frac{1}{2}$ of 1 per cent. Actual payment by the United States Treasury for gold in imported and domestic ore or concentrate was at 99.75 per cent of the price quoted by the Treasury which, at the close of 1944, was equal to \$34.9125 per ounce. The United States Senate Banking and Currency Committee, on March 14, 1945, rejected a proposal to increase the price of gold from \$35 an ounce to \$56. The Committee voted to reduce to 25 per cent the gold reserve requirements against Federal Reserve Bank deposits and notes.

Table 42.—Average Commercial Ratio of Silver to Gold for Each Specified Year Since 1700

(Supplied by United States Mint)

Year		Year		Year	
1700.....	14.81	1905.....	33.87	1936.....	77.09
1750.....	14.55	1910.....	38.22	1937.....	77.44
1800.....	15.68	1915.....	40.48	1938.....	80.39
1850.....	15.70	1920.....	20.28	1939.....	88.84
1875.....	16.64	1925.....	29.78	1940.....	99.76
1880.....	18.05	1930.....	53.74	1941.....	99.73
1885.....	19.41	1932.....	73.29	1942.....	90.57
1890.....	19.75	1933.....	59.06	1943.....	77.67
1895.....	31.60	1934.....	72.49	1944.....	77.67
1900.....	33.33	1935.....	54.19	1945.....	67.00
				1946.....	40.83

Table 43.—Monetary Stock of Principal Countries at End of 1946 (Report of U.S. Mint)
Gold and Silver Converted to United States Money ('000's omitted)

Country	Name of unit	Average exchange rate December 1946 New York	Gold Stock	Monetary silver stock
United States.....	dollar	1.000	20,528,979	3,412,870
Canada.....	dollar	1.000	536,038	60,333
Mexico.....	peso	0.2058	180,615	96,732
British Honduras.....	dollar	1.000		202
Costa Rica.....	colon	0.1770	2,015	
Dominican Republic.....	dollar	1.000	2,000	1,150
El Salvador.....	colon	0.4000	24,243	1,220
Guatemala.....	quetzal	1.000	28,734	2,502
Nicaragua.....	cordoba	0.2000	4,391	301
Bolivia.....	boliviano	0.0236	21,986	52
Brazil.....	cruzeiro	0.0541	354,328	
Chile.....	peso	0.0516	64,706	
Colombia.....	peso	0.5714	145,380	10,294
Ecuador.....	sucre	0.0665	21,455	
Paraguay.....	guarani	0.3205	1,870	
Peru.....	sol	0.1538	24,035	3,537
Uruguay.....	peso	0.6583	199,583	11,961
Venezuela.....	bolivar	0.2985	226,711	38,898
Austria.....	schilling		14	
Belgium.....	franc	0.0228	734,590	
Denmark.....	kroner	0.2087	37,354	
Eire.....	pound	4.0294	15,919	10,009
Finland.....	markka		76	
France.....	franc	0.0084	796,064	
Greece.....	drachma			
Hungary.....	forint		24,195	
Netherlands.....	florin	0.3779	264,255	139,714
Roumania.....	leu			
Spain.....	peseta	0.0913	110,830	47,069
Sweden.....	krona	0.2782	380,899	48,278
Ceylon.....	rupee	0.3015		
Iraq.....	dinar	4.0294		4,391
Japan.....	yen			
Korea.....	won			
Palestine and Transjordan.....	pound	4.0294		7,293
Algeria.....	franc	0.0084	1,805	
Ethiopia.....	dollar	0.4015		5,626
Portuguese East Africa.....	escudo	0.0400	5,016	939
Portuguese West Africa.....	angolar	0.0400		
Rhodesia.....	pound	4.0294	15	9,690
Union of South Africa.....	pound	4.0050	941,109	31,064
Fiji.....	pound	3.6301		930
New Zealand.....	pound	3.2236	23,087	12,862

THE ALLUVIAL GOLD MINING INDUSTRY, 1946

By far the major portion of alluvial gold was produced in the Yukon and British Columbia; relatively small quantities were obtained in Alberta.

In 1946 there were 60,925 troy ounces of fine gold recovered from crude gold obtained in Canadian alluvial deposits. This is an increased production of 46 per cent over the preceding year. Reviewing the past twenty years, it is noted that the peak of production of placer gold occurred in 1939, and lowest annual output was in 1944.

No placer gold mining operations were reported for 1946 from the eastern provinces, including Quebec and Ontario.

Saskatchewan and Alberta.—The small amount of gold, considered as being placer in origin, received at the Royal Canadian Mint, Ottawa, is assumed to have come from along the North Saskatchewan River. There has been activity in this district, vicinity of Edmonton, dating from about 1860.

British Columbia.—It has been found impractical to obtain complete reports for each individual placer mining operation in British Columbia inasmuch as a considerable quantity of the crude placer gold is recovered annually by prospectors of no fixed abode who, in many instances, market their recoveries through local merchants and banks. Recoveries in 1945 were made chiefly from deposits located in the Atlin and Cariboo districts.

Table 44.—Summary Statistics of Alluvial Gold Mining in Canada, 1945 and 1946

	1945			1946		
	British Columbia	Yukon	Alberta and Saskatchewan	British Columbia	Yukon	Alberta and Saskatchewan
Number of firms and individual operators (d)	33	5		29	3	(a)
Number of employees	69	165		94	246	
Salaries and wages paid.....\$	119,714	572,969		206,293	906,691	
Electricity generated for own use.....k.w.h.	260,000	11,630,900			22,401,700	
Electricity generated for sale.....		5,955,900			6,366,700	
Crude gold recovered.....crude oz.	12,589	38,000	110	11,812	50,243	136
Quantity of material handled.....cu. yd.	263,527	2,981,599		428,603	5,917,740	
Length of ditches.....Miles (b)	54	48		23	48	
Total gross value of alluvial products.....\$	398,591	1,224,210	3,952	367,122	1,474,231	4,079
Fuel and electricity used (purchased).....\$	7,948	33,556		18,411	65,795	
Process supplies used.....\$	8,260	19,742		26,879	19,991	
Cost of freight and express on dust, nuggets, bullion, etc. shipped (c).....\$	1,289	5,259		2,012	8,733	
Cost of smelter, refinery and mint treatment on material shipped (c).....\$	2,507	2,187		2,745	11,377	
Total net value of alluvial products.....\$	378,587	1,163,466	3,952	317,075	1,368,335	4,079

(a) Represents receipts of crude gold at Dominion Assay Office, Vancouver, B.C. or Royal Canadian Mint, Ottawa.

(b) Includes flume in use.

(c) Information not completely available.

(d) In addition to the number shown in the table, there were numerous small operators from whom returns were not obtainable.

Table 45.—Alluvial Gold Recovered and Quantity of Material Handled (b), 1926-1946

Year	British Columbia				Yukon				Average value gold per fine ounce
	Material handled (c) cu. yd.	Gold recovered fine oz.	Ounces per cu. yd.	Value per cu. yd.	Material handled (c) cu. yd.	Gold recovered fine oz.	Ounces per cu. yd.	Value per cu. yd.	
1926.....	1,237,090	16,730	0.0135	0.279	2,501,200	25,344	0.0101	0.208	20.67
1927.....	2,470,552	7,353	0.0029	0.0599	2,421,489	30,778	0.0127	0.262	20.67
1928.....	1,188,667	6,739	0.0057	0.1178	5,097,182	34,116	0.0067	0.1385	20.67
1929.....	1,336,390	5,158	0.0039	0.0806	4,500,000	35,678	0.0079	0.1633	20.67
1930.....	224,339	7,164	0.0319	0.6593	3,559,642	35,160	0.0099	0.2046	20.67
1931.....	1,567,271	13,741	0.0086	0.1853	4,914,638	44,061	0.0090	0.1939	21.55
1932.....	1,053,677	16,320	0.0155	0.3637	6,051,256	40,373	0.0067	0.1572	23.47
1933.....	1,326,721	19,142	0.0144	0.4118	5,605,522	39,174	0.0070	0.2002	28.60
1934.....	2,034,522	20,145	0.0099	0.3415	6,315,070	38,703	0.0061	0.2104	34.50
1935.....	1,855,937	24,744	0.0133	0.4680	5,442,861	35,705	0.0066	0.2322	35.19
1936.....	1,083,934	34,711	0.0166	0.5815	8,067,159	50,192	0.0062	0.2172	35.03
1937.....	3,472,025	43,322	0.0125	0.4373	8,298,514	46,679	0.0056	0.1959	34.99
1938.....	4,138,746	46,207	0.0112	0.3939	8,870,628	71,303	0.0080	0.2813	35.17
1939.....	4,779,407	39,797	0.0083	0.2999	11,152,198	85,572	0.0077	0.2782	36.14
1940.....	6,680,457	32,128	0.0048	0.1848	11,551,170	79,905	0.0069	0.2656	38.50
1941.....	4,587,103	35,020	0.0076	0.2926	8,792,220	70,847	0.0081	0.3119	38.50
1942.....	1,884,887	26,323	0.0139	0.5352	11,875,833	(a) 83,198	0.0070	0.2695	38.50
1943.....	754,202	11,680	0.0156	0.6006	8,028,117	(a) 41,157	0.0051	0.1964	38.50
1944.....	531,737	9,402	0.0177	0.6815	4,687,174	(a) 23,816	0.0050	0.1956	38.50
1945.....	263,527	10,071	0.0382	1.4707	2,981,599	(a) 31,721	0.0106	0.4081	38.50
1946.....	428,603	15,530	0.0362	1.3303	5,917,740	(a) 45,283	0.0076	0.2793	36.75

(a) Fine gold received at Royal Canadian Mint (Vancouver Assay Office); previous year's figures represent estimated fine gold in crude gold recovered.

(b) In addition relatively small amounts of alluvial gold have been recovered in Quebec, Saskatchewan and Alberta but complete data are not available; also, data relating to material handled, particularly those pertaining to small operations, are not complete and necessitate estimates in order to obtain totals.

(c) Data partly conjectural and include some overburden and barren material.

THE AURIFEROUS QUARTZ MINING INDUSTRY IN CANADA

The great part of the gold of Canada comes from the Canadian Shield, an immense area of precambrian rocks extending from the Labrador coast westward almost to the mouth of the MacKenzie River. The area of the shield is roughly 1,825,000 square miles, almost half of Canada. The deposits of the shield are of two main types, namely, quartz veins, from which most of the gold, up to the present time, has been won, and sulphide deposits which produce a smaller but very considerable proportion. The second great source of gold in Canada has been the Western or Cordilleran section, comprising British Columbia and Yukon Territory—the gold production from this section includes relatively large quantities obtained from alluvial deposits. The third principal area in which gold deposits occur is the Acadian region of Eastern Canada, the metal occurring principally in Nova Scotia where it has been mined since 1862.

Lode gold deposits, like most metalliferous ore deposits, are very closely linked in origin and place with geological formations of certain ages and types. In broad outline these relationships are known and easily understood, but because geological information is very incomplete for Canada—less than a fifth of Canada has been studied in any adequate manner—it is not yet possible to indicate the location of more than a part of the ground that is favourable for the occurrence of metallic ore deposits.

Geological explorations extending far beyond ground that has been geologically mapped provide general information and permit the delineation of broad features relating to ore deposition. In mapped areas much more detailed information of like type is available. Knowledge of the relationship between geology and ore deposition is of the greatest importance because it guides the search for new deposits.

Canada is divisible broadly into four large regions, each having its own characteristic stratigraphy and structure. These are from west to east: (1) the Cordilleran region embracing most of British Columbia and Yukon, (2) the Plains region forming a broad belt east of the Cordillera, (3) the Canadian Shield extending east to the St. Lawrence and (4) the Appalachian region embracing southeastern Quebec and the Maritime Provinces. A description of these regions, by George Hanson, Ph.D., Chief Geologist of the Geological Survey, Ottawa, appeared in the Dominion Bureau of Statistics' Gold Mining Report for 1943.

In 1946 there were 684 active auriferous quartz mines compared with 716 in 1945. The number of producing properties totalled 88 during the year under review, as against 83 in the preceding year.

The gross value of output of the entire auriferous quartz mining industry, including the value of all recoverable metals—gold, silver, etc.—totalled \$88,422,683 in 1946 compared with \$85,819,315 in 1945. The major producing provinces were Ontario with \$65,297,233, Quebec with \$16,363,386, and British Columbia with \$4,176,664.

Employees in the lode gold mining industry totalled 21,973 compared with 18,388 in 1945. Salaries and wages paid amounted to \$47,211,062 against \$37,690,177 in the preceding year. Fuel and electricity consumed by the industry in 1946 totalled \$6,259,876, and the cost of explosives, drill steel and other process supplies used amounted to \$14,401,904. The Canadian gold mining companies paid \$7,334,500 in taxes and spent \$6,417,109 in prospecting and preliminary exploration of new areas or deposits.

Table 46.—Principal Statistics of the Auriferous Quartz Mining Industry in Canada, 1945 and 1946

Province	Number of active operators	(b) Number of operating plants or mines	Number of employees	Salaries and wages	Cost of fuel and electricity	(a) Cost of process supplies used	Amount of freight, etc., paid on ore, slag, etc.	Smelter and refinery treatment costs	Gross value of bullion, ore, concentrates or residues shipped from mines (c)	Net value of bullion, ore, concentrates or residues shipped from mines (c)
1945—										
Nova Scotia.....	4	4	78	\$ 114,054	\$ 27,164	\$ 32,430	\$ 161	\$ 1,251	\$ 116,549	\$ 55,543
Quebec.....	367	368	4,672	9,101,670	1,523,310	2,582,764	57,793	472,994	17,974,078	13,337,217
Ontario.....	229	230	11,535	24,162,621	3,225,662	7,436,469	100,910	627,930	59,649,319	48,205,348
Manitoba.....	11	11	264	513,493	107,846	128,652	3,834	16,496	1,479,140	1,222,582
Saskatchewan.....	2	2	30	33,493	3,361	.....	.....	.....	.....	—5,561
British Columbia.....	36	38	1,476	2,837,910	388,076	787,634	185,467	268,969	6,266,155	4,636,009
Northwest Territories.....	62	62	337	892,487	120,080	83,285	687	3,498	334,074	125,924
Yukon.....	1	1	6	13,826	.....	.....	.....	.....	.....	.....
Canada.....	712	716	19,388	(d) 37,690,177	5,400,999	11,101,264	348,852	1,391,138	85,819,315	67,577,063
1946—										
Nova Scotia.....	4	4	72	106,018	24,943	27,082	274	938	151,538	98,301
Quebec.....	405	405	5,409	11,774,895	1,826,256	2,893,785	63,507	341,786	16,363,380	11,238,092
Ontario.....	166	167	14,050	29,864,349	3,669,993	9,503,694	121,664	586,350	65,207,293	51,436,362
Manitoba.....	16	16	419	897,713	150,072	199,919	3,457	15,368	1,609,198	1,240,352
Saskatchewan.....	2	2	3	1,440	.....	.....	.....	.....	.....	.....
British Columbia.....	45	46	1,532	3,290,245	392,070	1,573,076	109,021	161,820	4,176,664	1,940,677
Northwest Territories.....	46	46	488	1,276,402	196,542	204,348	7,884	6,682	824,604	409,208
Yukon.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Canada.....	684	686	21,973	(d) 47,211,062	6,259,576	14,401,904	305,807	1,112,944	88,422,683	66,342,152

(a) Explosives, chemicals, etc.

(b) Producing mines: 1945—83; 1946—88.

(c) Value of bullion produced plus value of ore, concentrates, etc., shipped.

(d) Includes in salaries \$6,488,334 for 1945 and \$7,243,424 for 1946.

Table 47.—Principal Statistics Relating to Producers Only in the Auriferous Quartz Mining Industry in Canada, 1946

Province	Number of producing plants or mines	Number of employees	Salaries and wages	Cost of fuel and electricity	(a) Cost of process and supplies used	Value of freight paid on shipments of ore, slag, etc.	(b) Smelter and refinery treatment costs	Gross value of bullion, ore, concentrates or residues shipped from mines (c)	Net value of bullion, ore, concentrates or residues shipped from mines (c)
Nova Scotia.....	4	72	106,018	24,943	27,082	274	938	151,538	98,301
Quebec.....	20	3,690	8,069,259	1,458,317	2,613,087	63,507	341,786	16,363,386	11,886,689
Ontario.....	43	13,289	28,296,801	3,527,419	9,262,591	121,664	586,350	65,297,233	51,799,209
Manitoba.....	1	234	495,790	115,178	159,518	3,457	15,368	1,609,198	1,315,677
Saskatchewan.....									
British Columbia.....	17	1,251	2,726,361	345,154	1,323,570	109,021	161,820	4,176,664	2,237,099
Northwest Territories.....	3	254	659,423	125,584	174,738	7,884	6,682	824,664	509,776
Yukon.....									
Total Canada 1946.....	88	18,790	40,353,652	5,596,595	13,560,586	305,897	1,112,944	88,422,683	67,846,751
Total Canada 1945.....	83	16,382	34,556,530	5,159,813	10,953,744	348,852	1,391,138	85,819,315	67,965,768
Total Canada 1944.....	85	16,657	36,153,991	5,850,906	11,119,240	373,074	1,586,095	94,263,416	75,334,191
Total Canada 1943.....	135	18,923	40,485,098	6,385,147	12,762,116	453,720	1,620,898	116,833,847	95,611,966
Total Canada 1942.....	184	25,814	54,033,613	7,570,656	17,889,267	741,329	2,346,264	160,564,783	132,026,267
Total Canada 1941.....	255	31,850	61,063,035	8,336,180	20,721,498	916,323	2,678,508	179,103,182	146,450,673
Total Canada 1940.....	278	30,353	53,560,938	7,963,193	20,390,784	691,649	2,486,587	178,794,078	147,289,865

(a) Explosives, etc.

(b) Includes handling charges.

(c) Value of bullion produced plus value of ore, concentrates, etc., shipped.

Table 48.—Ores Mined and Milled, Crude Bullion Recovered and Crude Bullion and Concentrates Shipped in the Auriferous Quartz Mining Industry, 1946

	Nova Scotia	Quebec	Ontario	Manitoba	Saskatchewan	British Columbia	Northwest Territories	Canada
Number of producing mines.....	4	20	43	1	.....	17	3	88
Ore mined..... ton	15,094	2,721,822	7,457,567	150,335	.....	320,502	47,205	10,712,615
Material discarded (sorted)..... ton	.....	39,973	175,752	.....	.....	10,722	2,590	238,237
Ore milled (ground, etc.)..... ton	15,094	2,547,296	7,266,796	149,875	.....	285,222	44,337	10,306,720
Tailings re-treated..... ton	.....	.....	.....	.....	.....	.....	.....	.....
Gold content of ores, slags, residues and concentrates shipped—	.....	.....	.....	.....	.....	.....	.....	.....
To foreign smelters..... fine oz.	.....	.....	.....	.....	.....	.....	.....	.....
To Canadian smelters..... fine oz.	.....	29,622	16,429	.....	.....	42,385	.....	58,814
Bullion bars shipped—	.....	.....	1,930	.....	.....	985	.....	32,537
Gold content..... fine oz.	4,155	390,232	1,660,843	43,819	.....	65,987	22,673	2,187,709
Silver content..... fine oz.	137	90,102	236,407	6,621	.....	12,587	6,112	351,966
Bullion produced by amalgamation..... crude oz.	4,442	32,063	205,999	4,544	.....	38,573	5,643	291,264
Bullion produced by cyanidation..... crude oz.	.....	516,279	2,027,778	57,792	.....	42,551	28,802	2,673,602
Total bullion produced..... crude oz.	4,442	548,342	2,233,777	62,336	.....	81,524	34,445	2,964,866
Content of bullion bars produced—	.....	.....	.....	.....	.....	.....	.....	.....
Gold..... fine oz.	4,155	410,616	1,742,689	43,819	.....	65,987	22,381	2,289,647
Silver..... fine oz.	137	95,938	340,273	6,621	.....	12,587	6,010	461,566
Gold value (standard)..... \$	85,892	8,488,186	36,024,596	905,822	.....	1,364,072	402,646	47,331,214
Silver value..... \$	116	80,252	294,468	5,572	.....	10,529	5,155	386,092
Exchange premium on bullion bars produced..... \$	65,530	6,601,952	27,820,128	697,804	.....	1,060,950	356,863	36,603,227
Value of ores, concentrates, slags and residues sold (shipped)..... \$	.....	1,192,996	1,158,041	.....	.....	1,741,113	.....	4,092,150
Total Gross Value of Production..... \$	151,538	16,362,386	65,297,233	1,609,198	.....	4,176,664	824,664	88,422,653
Value of fuel, electricity and process supplies used, also freight on shipments, marketing, smelter and refinery charges..... \$	53,237	5,125,334	13,881,701	368,816	.....	2,235,987	415,456	22,050,531
Net Value of Production..... \$	98,301	11,238,052	51,415,532	1,240,382	.....	1,940,677	409,208	66,342,152

Table 49.—Ores, Concentrates, Slags, Etc., Shipped to Smelters From Canadian Gold Mines, 1930-1946

Year	To Canadian plants						To Foreign plants					
	Ores			Concentrates			Ores			Concentrates		
	Tons	Gold content fine oz.	Slags, residues, precipitates	Tons	Gold content fine oz.	Slags, residues, precipitates	Tons	Gold content fine oz.	Slags, residues, precipitates	Tons	Gold content fine oz.	Slags, residues, precipitates
1930.....	52,540	22,910	2	1,187	9,665	117	70,497	22,492	53	18,276	46,102	1,009
1931.....	51,579	21,756	12	3,120	16,805	1,505	24,244	11,870	47	20,271	48,743	1,306
1932.....	36,397	17,943	26	191	952	1,416	36,736	15,810	30	16,925	52,508	869
1933.....	30,096	14,882	55	490	1,349	6,279	3,292	2,203	34	29,111	76,601	1,392
1934.....	48,106	29,688	203	2,490	10,440	1,487	1,419	1,936	27	43,053	114,476	599
1935.....	18,239	7,008	58	7,045	35,958	6,231	1,242	2,840	25	46,050	90,167	11,310
1936.....	4,705	6,567	64	7,865	34,654	3,609	1,864	3,421	25	65,660	137,273	16,903
1937.....	37,126	9,649	130	6,981	21,865	2,060	2,516	8,108	74	62,987	163,781	912
1938.....	172,377	36,008	37	8,404	25,552	420	4,445	8,443	1,281	40,828	142,513	23,101
1939.....	271,666	47,114	797	7,747	24,184	4,507	3,853	8,990	235	39,530	112,126	26,631
1940.....	201,941	34,315	158	4,485	13,552	3,761	7,453	8,107	103	44,570	125,704	47,160
1941.....	202,943	38,380	369	1,628	7,492	4,444	7,453	11,222	115	43,855	122,619	56,183
1942.....	280,978	38,492	137	2,555	7,307	2,831	1,366	1,020	68	40,428	126,931	55,999
1943.....	268,334	36,429	311	4,490	12,335	2,069	.....	.....	40	20,615	59,949	34,704
1944.....	205,379	26,535	143	4,895	11,900	1,858	.....	.....	73	20,755	54,233	35,955
1945.....	177,090	26,834	647	5,474	13,903	1,832	109	185	47	19,506	49,193	44,559
1946.....	146,075	19,532	314	5,155	10,646	2,359	.....	.....	25	11,969	49,164	9,650
Grand Total.....	2,205,580	434,042	3,463	74,142	258,539	46,785	166,479	106,527	2,302	584,479	1,572,083	368,242

Table 50.—Certain Data Relating to the Production of Gold by the Entire Auriferous Quartz Mining Industry in Canada, 1929-1946 (Averages)

Year	Ounces of gold produced per wage-earner year	Cost of fuel and electricity per ounce of gold produced	Cost of wages per ounce of gold produced	Cost of explosives and other process supplies used per ounce of gold produced	Cost of freight and smelter refinery treatment on ores and bullion shipped per ounce of gold produced	Taxes per ounce gold produced	Total of specified costs
	ounces	\$	\$	\$	\$	\$	\$
1929.....	218	1.46	7.18	Information not available	Information not available	Information not available	.....
1930.....	237	1.25	6.63				.....
1931 (a).....	250	1.19	6.50				.....
1932.....	255	1.21	6.31				.....
1933 (b).....	207	1.36	7.45				.....
1934 (c).....	154	1.71	9.64				.....
1935.....	146	1.89	10.48	4.38			16.75
1936.....	137	1.98	11.32	4.46			17.76
1937.....	132	2.10	12.18	4.65	(d) 0.33		19.26
1938.....	150	1.85	10.95	4.53	0.56		17.89
1939.....	157	1.81	10.69	4.45	0.67		17.62
1940.....	161	1.76	10.48	4.49	0.69		17.42
1941.....	155	1.82	11.56	4.53	0.77		18.68
1942.....	176	1.84	11.47	4.34	0.75		18.40
1943.....	176.7	2.12	11.47	4.24	0.69	4.89	23.41
1944.....	159	2.43	12.81	4.60	0.81	4.15	24.80
1945.....	140	2.45	14.08	5.09	0.74	3.74	26.10
1946.....	122	2.63	16.77	6.05	0.59	3.08	29.12

(a) Equalization exchange premiums paid by the Dominion Government to gold miners (Great Britain goes off gold standard).

(b) United States goes off gold standard.

(c) United States gold dollar reduced in weight from 25.8 to 15 5/21 grains, 0.9 fine.

(d) Not including Mint charges and marketing prior to 1933.

NOTE.—The data contained in the foregoing table have been compiled from reports received from both producing and non-producing (exploring and developing) operators in the auriferous quartz mining industry. This fact should be noted if the information is to be construed or employed as possible criteria for technological or other statistical study. The trends revealed are not to be interpreted as entirely reflecting "Cause and effect" in the operation of producing mines *only*, but rather as indices of change in the industry as a whole. For data relating to producers only, see Table 51.

Table 51.—Certain Data (Averages) Relating to the Total Production of Gold by Producers only in the Auriferous Quartz Mining Industry in Canada, 1931, 1939-1946

Year	Ounces of gold produced per wage-earner year	Cost of fuel and electricity per ounce of gold produced	Cost of wages per ounce of gold produced	Cost of explosives and other process supplies used per ounce of gold produced	Cost of freight and smelter refinery treatment on ores and bullion shipped per ounce of gold produced	Taxes per ounce gold produced	Total of specified costs
	ounces	\$	\$	\$	\$	\$	\$
1931.....	256	1.19	6.38	(*)	(*)	(*)	.....
1939.....	164	1.76	10.25	4.33	0.67	(*)	17.01
1940.....	165	1.72	10.20	4.41	0.69	(*)	17.02
1941.....	158	1.79	11.37	4.46	0.77	(*)	18.39
1942.....	177	1.83	11.41	4.33	0.75	(*)	18.32
1943.....	177	2.12	11.42	4.23	0.69	4.89	23.35
1944.....	163	2.41	12.59	4.57	0.81	4.12	24.50
1945.....	151	2.34	13.17	4.97	0.74	3.68	24.90
1946.....	141	2.35	14.38	5.69	0.59	2.99	26.00

* Data not available.

Table 52.—Principal Statistics Relative to all Ontario Gold Mines, by Areas (d), 1944-1946

Camp or District	Number of producers	Ore treated (c)	Total gold recovered	Average ounces per ton recovered	Employees	Salaries and wages paid	Cost of fuel electricity and process supplies
1944	No.	Tons	Fine oz.		No.	\$	\$
Porcupine.....	16	3,788,313	873,027	0.23	6,022	13,225,351	5,085,404
Kirkland Lake.....	9	1,011,225	383,167	0.38	2,346	5,129,054	2,396,345
Larder Lake.....	3	752,954	114,838	0.15	644	1,371,210	875,748
Matachewan.....	2	341,359	28,635	0.08	238	507,215	421,418
Sudbury.....	1		(b) 49		64	157,374	74,995
Thunder Bay.....	4	(a) 305,276	100,667	0.33	695	1,576,544	943,352
Rainy River and Kenora.....					3	4,233	
Patricia.....	8	601,441	175,657	0.29	1,107	2,481,223	1,384,795
Total.....	43	6,800,568	1,676,040	0.24	11,119	24,452,204	11,182,057
1945							
Porcupine.....	14	3,585,003	830,909	0.23	6,307	13,163,072	5,168,124
Kirkland Lake.....	10	983,724	360,992	0.32	2,400	5,073,479	2,292,892
Larder Lake.....	3	688,205	109,354	0.16	663	1,350,314	830,454
Matachewan.....	2	367,917	35,088	0.09	244	499,223	413,975
Sudbury.....	1		4		72	160,025	75,670
Algoma.....	1		36		10	14,335	185
Thunder Bay.....	5	128,543	49,829	0.39	615	1,295,052	663,625
Rainy River and Kenora.....	2	75	29	0.39	21	52,448	4,910
Patricia.....	8	524,044	138,752	0.26	1,199	2,551,222	1,265,146
Eastern Ontario.....					4	3,451	150
Total.....	46	6,277,511	1,533,993	0.24	11,535	24,162,621	10,715,131
1946							
Porcupine.....	15	3,955,153	904,797	0.23	7,254	15,158,203	6,142,520
Kirkland Lake.....	9	1,077,790	403,589	0.37	2,726	5,799,277	2,576,045
Larder Lake.....	3	862,078	145,329	0.17	836	1,754,359	1,028,894
Matachewan.....	2	431,509	42,702	0.10	288	604,755	494,814
Sudbury.....							
Algoma.....							
Thunder Bay.....	6	384,521	106,509	0.28	861	1,835,947	962,747
Rainy River and Kenora.....							
Patricia.....	8	555,745	158,122	0.28	1,324	3,144,260	1,584,990
Total.....	43	7,266,796	1,761,048	0.24	13,289	28,296,801	12,790,010

(a) In addition, 15,732 tons of tailings were re-treated in 1944.

(b) Mill clean-up.

(c) Does not include low grade discarded by sorting, but includes crude ore milled and smelted.

(d) Includes data for all active properties.

Table 53.—Ores Mined and Treated by Auriferous Quartz Mining Industry for Years Specified

Year	Ore hoisted	Ore milled (c)	Crude ore shipped to smelters (d)	Low grade sorted out	Tailings retreated	Gold recovered as bullion (b)	Gold in crude ore shipped	Gold in concentrates slag, etc., shipped
	tons	tons	tons	tons	tons	fine oz.	fine oz.	fine oz.
1930.....	4,472,803	4,306,869	123,037	(a)	37,095	1,782,556	45,342	56,893
1935.....	8,832,901	8,888,129	19,481	(a)	57,798	2,492,145	9,848	143,666
1936.....	10,694,208	10,504,181	6,569	(a)	33,814	2,903,063	9,988	192,439
1937.....	12,388,489	11,880,323	39,642	457,622	97,710	3,283,795	17,757	188,618
1938.....	14,749,649	14,158,555	176,822	528,696	64,926	3,810,642	44,451	191,586
1939.....	17,105,744	16,150,173	275,519	660,578	18,426	4,160,352	56,044	167,448
1940.....	18,986,306	18,083,439	209,394	757,538	180,311	4,386,673	42,422	190,157
1941.....	20,031,736	19,026,273	210,396	936,003	480,289	4,405,986	49,602	190,738
1942.....	17,722,866	16,820,442	282,334	658,439	5,176	3,898,999	39,512	193,068
1943.....	12,853,610	12,206,518	268,334	361,522	29,716	2,869,635	36,429	109,055
1944.....	10,790,495	10,330,899	205,379	234,820	18,233	3,300,090	26,535	103,946
1945.....	9,780,555	9,437,796	177,208	136,328		2,068,910	27,019	109,487
1946.....	10,712,615	10,306,720	146,075	229,237		2,289,647	19,532	71,819

(a) Not available.

(b) Content of bullion shipped 1930-1935; 1936-1946 content of bullion produced.

(c)+(d)=total crude ore treated.

Table 54.—Gold and Silver Content of Bullion Produced and of Ores, Concentrates, etc., Shipped, with Average Grade of Ore Shipped and Ore Milled at Auriferous Quartz Mines in Canada, with Average Price of Gold and Silver in Canadian Funds, 1930-1946

Year	Tonnage treated (c)	Gold content (b)	Silver content (b) (d)	Oz. of fine gold per ton	Oz. of fine silver per ton	Average price of gold	Average price of silver
		fine oz.	fine oz.			\$ per oz.	\$ per oz.
1930.....	4,429,906	1,884,791	4,784,549	0.43	1.08	20.67	0.381
1931.....	5,526,379	2,271,278	2,725,751	0.41	0.49	21.55	0.298
1932.....	5,997,492	2,502,327	2,085,133	0.42	0.35	23.47	0.317
1933.....	6,480,164	2,455,365	1,643,793	0.38	0.25	28.60	0.378
1934.....	7,524,803	2,490,513	1,399,282	0.33	0.19	34.50	0.475
1935.....	8,907,610	2,645,659	1,439,672	0.30	0.16	35.19	0.648
1936.....	10,510,750	3,095,427	1,928,854	0.29	0.18	35.03	0.451
1937.....	(a) 11,919,965	3,490,170	1,912,286	0.29	0.16	34.99	0.449
1938.....	(a) 14,335,377	4,046,679	1,928,175	0.28	0.13	35.17	0.435
1939.....	(a) 16,425,692	4,383,844	2,119,708	0.27	0.13	36.14	0.405
1940.....	(a) 18,292,833	4,619,252	2,729,998	0.25	0.15	38.50	0.382
1941.....	(a) 19,236,669	4,646,326	2,773,460	0.24	0.14	38.50	0.383
1942.....	(a) 17,102,776	4,131,579	2,186,369	0.24	0.13	38.50	0.422
1943.....	(a) 12,474,852	3,015,119	1,399,778	0.24	0.11	38.50	0.452
1944.....	(a) 10,536,278	2,430,571	906,788	0.23	0.09	38.50	0.430
1945.....	(a) 9,615,004	2,205,416	1,205,147	0.23	0.13	38.50	0.47
1946.....	10,452,775	2,380,998	1,025,619	0.23	0.10	36.75	0.886

(a) Material discarded by sorting not included.

(b) Relatively small quantity of gold and silver contained in concentrates, slags, etc., shipped and in cyanide solution in circuit may have originated in ores treated during the previous year; from 1937 represents metal content of total bullion produced plus metal in ores or concentrates shipped to smelters.

(c) Does not include tailings re-treated, but includes ore milled plus crude ore shipped to smelters.

(d) The relatively high proportion of silver produced in 1930 and 1931 resulted chiefly from increased shipments of high silver content gold ores from the Premier and Prosperity mines in British Columbia; these mines are classified as being auriferous quartz. Prices are reported in Canadian funds.

Table 55.—Milling Capacity of Operating Canadian Gold Mines, 1936-1946 (Tons of 2,000 pounds per 24 hours)

Year	Nova Scotia	Quebec	Ontario	Manitoba	Saskatchewan	British Columbia	Northwest Territories
1936.....	713	4,514	22,639	1,000	.....	4,120	.....
1937.....	565	6,090	25,249	975	30	3,915	.....
1938.....	542	8,217	30,097	875	1,000	4,590	.....
1939.....	562	9,580	33,324	865	1,000	4,417	.....
1940.....	450	11,215	35,030	690	1,200	4,255	275
1941.....	319	12,654	37,416	990	1,355	4,510	510
1942.....	247	14,330	36,135	903	1,202	4,303	710
1943.....	280	13,304	32,555	753	2	2,845	510
1944.....	180	13,059	30,710	550	.....	2,650	66
1945.....	187	12,600	30,457	550	.....	2,740	417
1946.....	172	12,035	30,370	550	.....	3,052	417

Table 56.—Specified Costs Per Ton of Ore Milled at Certain of the Principal Auriferous Quartz Mines in Canada, 1946

Name of Mine	Development and exploration (a)	Mining	Milling	General (b)	Total before depreciation and taxes	Depreciation	Taxes	Total costs
	\$	\$	\$	\$	\$	\$	\$	\$
QUEBEC								
Belleterre Quebec Mines Ltd.....	1.475	4.425	1.286	0.311	7.497	1.313	1.098	9.908
Consolidated Beattie Mines Ltd.....	0.477	1.329	1.888	1.471	5.165			
East Malartic Mines Ltd.....	0.414	2.464	0.703	0.496	4.077	0.762	0.123	4.962
Francoeur Gold Mines Ltd.....	0.56	2.39	1.50	0.98	5.43	0.56	nil	5.99
Lamaque Mining Co. Ltd.....	1.47	2.47	1.03	1.49	6.46	0.20	1.02	7.68
O'Brien Gold Mines Ltd.....	1.29	5.78	2.70	4.75	14.02	1.16	1.76	16.94
Perron Gold Mines Ltd.....	0.505	2.441	0.929	0.916	4.791	0.263	0.433	5.487
Senator-Rouyn Ltd.....	1.01	2.62	1.00	1.21	5.84	1.58	0.03	7.45
Sigma Mines (Quebec) Ltd.....	0.394	2.132	0.713	0.482	3.721	0.433	0.669	4.823
Siscoe Gold Mines Ltd.....	0.448	2.734	0.856	0.674	4.712			
Sladen Malartic Mines Ltd.....	0.56	1.62	0.88	0.39	3.45	0.22	0.03	3.70
Stadacona Mines (1944) Ltd.....	0.62	2.24	1.01	1.48	5.35		0.18	5.53
Sullivan Consolidated Mines Ltd.....	2.22	2.29	0.94	0.40	5.85	0.92	0.50	7.27
ONTARIO								
Porcupine District								
Aunor Gold Mines Ltd.....	1.32	4.08	1.07	0.79	7.26	1.45	1.15	9.86
Bonetal Gold Mines Ltd.....	0.75	2.31	1.39	1.00	5.45	1.24		6.69
Broulan Porcupine Mines Ltd.....	0.39	3.22	1.01	1.10	5.72	1.70		7.42
Sladen Ankerite Gold Mines Ltd.....	1.28	3.36	0.84	0.76	6.24	0.23	nil	6.47
Coniaurum Mines Ltd.....	2.33	3.79	1.05	0.27	7.44			
Hollinger Cons. Gold Mines— (Timmins).....	1.124	3.662	0.755	1.087	6.528	0.246	0.596	7.370
(Ross).....	3.045	1.901	1.870	1.054	7.870	0.019	0.054	8.943
McIntyre Porcupine Mines Ltd.....	0.614	4.994	0.974	0.268	6.850	0.154	1.180	8.184
Pamour Porcupine Mines Ltd.....	0.40	1.37	0.63	0.27	2.67	0.36	0.07	3.10
Paymaster Consolidated Mines Ltd.....	1.13	3.68	1.37	0.79	6.97	0.27	0.36	7.60
Preston East Dome Mines Ltd.....	1.74	3.86	0.80	0.29	6.39	0.49	0.31	7.19
Kirkland Lake District								
Bidgood Kirkland Gold Mines Ltd.....	6.07	5.29	2.33	1.90	15.59	0.25	0.04	15.88
Kirkland Lake Gold Mining Co. Ltd.....	1.71	5.05	1.31	1.51	9.58	0.87	0.39	10.84
Macassa Mines Ltd.....	1.169	5.315	1.416	1.749	9.649	0.776	1.179	11.604
Teck-Hughes Gold Mines Ltd.....	(c)	6.01	1.43	1.80	9.24	nil	0.52	9.76
Upper Canada Mines Ltd.....	3.22	3.36	1.07	0.68	8.33	0.73	0.65	9.71
Wright-Hargreaves Mines Ltd.....	(c)	6.446	1.622	1.875	9.943	0.316	2.502	12.761
Larder Lake District								
Chesterville Mines Ltd.....	0.44	1.46	0.81	0.52	3.23	1.16	nil	4.39
Kerr-Addison Gold Mines Ltd.....	0.900	1.269	0.756	0.492	3.417	0.369	1.090	4.876
Omega Gold Mines Ltd.....	0.325	3.080	1.470	0.091	4.966	0.119	0.010	5.095
Matatchewan District								
Hollinger (Young-Davidson) Mines Matatchewan Cons. Mines Ltd.....	0.413	0.835	0.766	0.458	2.472	0.041	0.194	2.707
	0.242	1.372	0.759	0.546	2.919	0.089	0.125	3.133
Thunder Bay District								
Leitch Gold Mines Ltd.....	3.29	9.61	2.84	0.33	16.07	2.14	3.13	21.34
Little Long Lac Gold Mines Ltd.....	1.03	5.22	2.26	1.96	10.47	0.07	nil	10.54
Magnet Consolidated Mines Ltd.....	5.903	6.643	1.994	0.443	14.983			
Patricia District								
Cochénour Willans Gold Mines Ltd.....	2.309	3.909	1.986	2.931	11.135	1.302		
Hasaga Gold Mines Ltd.....	1.067	1.729	1.225	0.624	4.645	0.557		
Madsen Red Lake Gold Mines Ltd.....	1.872	2.495	1.068	1.139	6.574	0.714	0.288	7.576
McKenzie Red Lake Gold Mines Ltd.....	1.27	4.03	1.40	1.46	8.16	0.44	0.03	8.63
Pickle Crow Gold Mines Ltd.....	2.83	5.24	1.45	1.64	11.16	1.09		
British Columbia								
Bralorne Mines Ltd.....	1.24	5.21	1.01	4.55	12.01		1.70	13.71
Cariboo Gold Quartz Mining Co. Ltd.....	1.425	7.466	1.910	2.619	13.420		3.42	13.762
Hedley-Mascot Gold Mines Ltd.....	3.92	2.55	2.27	3.65	12.39		0.15	12.54
Island Mountain Mines Co. Ltd.....	1.22	6.15	2.81	2.79	12.97		1.26	14.23
Pioneer Gold Mines of B.C. Ltd.....	3.30	14.00	5.35	5.15	27.79		0.47	28.26
Sheep Creek Gold Mines Ltd.....	1.63	5.99	2.28	1.63	11.53		0.21	11.74
Silbak Premier Mines Ltd.....	1.986	2.817	2.113	8.627	15.543		0.221	15.764

(a) Exclusive of outside exploration.

(b) Marketing, head office, etc. (exclusive of taxes).

(c) Included in mining.

Table 57.—Employees and Salaries and Wages Paid by Entire Auriferous Quartz Mining Industry*, 1931-1946

Year	Wage- earners	Salaried employees	Total employees		Wages paid	Average per capita wages paid	Salaries paid	Total salaries and wages
	No.	No.	No.		\$	\$	\$	\$
1931.....	9,083	553	9,636		14,755,669	1,625	1,711,496	16,467,165
1932.....	9,809	633	10,442		15,803,139	1,611	1,883,445	17,686,584
1933.....	11,880	943	12,823		18,303,504	1,541	2,232,508	20,536,012
1934.....	16,139	1,623	17,762		24,017,667	1,488	3,139,220	27,156,887
1935.....	18,121	1,713	19,834		27,717,164	1,529	3,806,743	31,523,907
1936.....	22,662	2,435	25,097		35,049,354	1,547	4,777,388	39,826,742
1937.....	26,440	2,700	29,140		42,505,613	1,608	5,713,705	48,219,318
1938.....	26,938	2,769	29,647		44,302,484	1,645	6,159,608	50,462,092
1939.....	27,959	2,663	30,622		46,836,845	1,675	6,369,380	53,206,225
1940.....	28,747	2,658	31,405		48,410,841	1,684	6,794,255	55,205,096
1941.....	29,820	2,731	32,551		54,735,716	1,836	7,415,094	62,150,810
1942.....	23,517	2,513	26,030		47,409,542	2,016	6,979,330	54,388,872
1943.....	17,061	1,977	19,038		34,576,891	2,027	6,088,392	40,665,283
1944.....	15,260	1,966	17,226		31,151,908	2,041	5,871,597	37,023,505
			Male	Female				
1945.....	15,807	2,581	17,995	393	31,201,843	1,964	6,488,334	37,690,177
1946.....	19,501	2,472	21,631	342	39,967,638	2,050	7,243,424	47,211,062

(*) Including any bonus paid.

Table 58.—Salaries and Wages Paid, Fuel and Electricity Used and Process Supplies Consumed by the Auriferous Quartz Mining Industry, by Provinces, 1931-1946

Year	Nova Scotia		Quebec		Ontario		Manitoba	
	Producing	Non-producing	Producing	Non-producing	Producing	Non-producing	Producing	Non-producing
	\$	\$	\$	\$	\$	\$	\$	\$
1931.....	5,409	3,988	573,192	48,115	16,543,014	448,768	256,743	62,231
1932.....	4,600	51,861	924,375	328,091	17,712,693	162,763	496,049	.....
1933.....	17,612	28,090	1,544,880	744,382	18,128,149	590,012	588,125	154,194
1934.....	206,729	32,940	2,007,574	1,418,330	20,763,904	1,419,484	826,625	512,586
1935.....	408,422	57,353	4,165,141	1,754,595	30,809,094	1,866,010	1,659,407	312,556
1936.....	779,767	40,304	6,448,220	2,317,382	35,829,753	3,789,527	1,896,053	217,017
1937.....	815,398	43,912	8,956,849	3,104,728	41,230,811	5,897,085	2,043,151	121,042
1938.....	808,872	8,834	11,396,444	1,396,019	46,899,149	2,473,232	1,914,962	15,627
1939.....	829,631	4,681	12,604,061	940,207	52,470,713	1,321,013	1,621,765	190,753
1940.....	596,592	158	14,090,722	770,280	54,745,840	895,822	1,642,103	2,558
1941.....	457,305	9,342	16,256,086	978,161	59,620,822	399,527	1,796,321	.....
1942.....	225,276	6,104	17,160,699	159,376	50,881,444	175,528	1,557,240	.....
1943.....	162,920	.....	14,892,857	159,840	38,831,504	8,681	958,737	.....
1944.....	157,802	2,548	13,323,443	523,566	35,312,042	322,219	595,795	.....
1945.....	171,000	2,648	11,701,727	1,595,917	34,041,088	836,664	630,069	119,657
1946.....	158,043	.....	12,140,663	4,354,273	41,086,811	1,951,225	770,486	477,218
	Saskatchewan		British Columbia		Northwest Territories		Canada	
1931.....	.....	.....	1,210,309	15,722	.....	.....	18,588,667	578,824
1932.....	.....	3,350	1,027,168	7,228	.....	.....	20,164,785	553,293
1933.....	.....	.....	1,736,556	334,149	.....	.....	22,015,322	1,850,827
1934.....	.....	8,367	3,398,918	810,726	.....	.....	27,203,750	4,202,433
1935.....	.....	94,162	6,312,731	678,467	.....	.....	43,354,795	4,763,143
1936.....	118,651	79,963	7,287,019	863,104	.....	42,766	52,359,463	7,350,063
1937.....	62,429	391,097	7,836,968	970,666	.....	321,305	60,945,606	10,849,835
1938.....	.....	519,791	9,226,363	338,303	531,534	442,035	71,077,324	5,193,841
1939.....	490,633	4,291	8,863,013	425,451	614,912	162,551	77,594,728	3,048,947
1940.....	602,534	.....	9,094,704	218,225	1,114,420	329,643	81,886,915	2,216,686
1941.....	726,468	.....	9,613,778	152,619	1,649,933	19,966	90,120,713	1,559,615
1942.....	413,441	.....	7,031,550	101,616	2,214,886	.....	79,484,536	442,624
1943.....	80	.....	3,771,871	26,010	1,014,302	.....	59,632,271	194,531
1944.....	.....	38,080	3,372,009	61,892	363,046	20,946	53,124,137	969,231
1945.....	.....	40,471	3,819,667	213,254	306,536	713,742	50,670,087	3,522,353
1946.....	.....	1,440	4,395,085	800,306	959,745	717,547	59,510,833	8,362,009

Table 59.—Wage-Earners, by Months, in the Entire Auriferous Quartz Mining Industry, 1931-1946

Month	1931	1941	1942	1943	1944	1945	1946
January.....	8,273	29,772	26,730	19,332	15,796	15,222	19,083
February.....	8,482	29,765	26,812	19,160	16,001	15,137	19,577
March.....	8,681	29,783	26,451	18,822	16,014	14,887	19,837
April.....	8,746	29,633	26,155	18,123	15,634	14,573	20,036
May.....	9,030	29,869	25,325	17,421	15,314	14,624	20,182
June.....	9,319	29,807	24,938	17,138	15,172	14,873	20,175
July.....	9,345	30,310	23,687	16,743	15,134	15,082	19,480
August.....	9,285	30,158	21,883	16,173	14,837	15,249	19,125
September.....	9,391	30,605	21,246	15,687	14,501	15,746	18,623
October.....	9,524	30,870	20,024	15,241	14,486	16,988	18,946
November.....	9,496	29,567	19,692	15,479	14,786	18,110	19,093
December.....	9,323	27,566	19,192	14,976	14,595	18,170	18,990

Table 60.—Employment* in Producing Lode Gold Mines in Canada, by Provinces, 1946 and 1947†

Month	Quebec		Ontario		British Columbia		Other districts and provinces		Canada	
	1946	1947	1946	1947	1946	1947	1946	1947	1946	1947
January.....	3,471	3,442	12,040	13,607	1,584	1,048	402	339	17,497	18,436
February.....	3,514	3,567	12,187	13,620	1,622	1,221	419	333	17,742	18,741
March.....	3,491	3,542	12,288	13,510	1,630	1,418	392	324	17,801	18,794
April.....	3,451	3,389	12,322	13,454	1,579	1,446	394	376	17,746	18,665
May.....	3,284	3,025	12,310	13,585	1,528	1,577	407	348	17,529	18,535
June.....	3,170	3,162	12,306	13,579	1,370	1,674	412	322	17,258	18,737
July.....	3,156	.....	12,260	.....	341	.....	495	.....	16,252	.....
August.....	3,100	.....	11,835	.....	363	.....	537	.....	15,835	.....
September.....	2,987	.....	11,675	.....	324	.....	534	.....	15,520	.....
October.....	3,083	.....	11,983	.....	303	.....	499	.....	15,868	.....
November.....	3,139	.....	12,171	.....	368	.....	541	.....	16,219	.....
December.....	3,029	.....	12,044	.....	988	.....	518	.....	16,579	.....

(*) Mines with 15 or more employees.

(†) Subject to revision.

Table 61.—Classification of Wage-Earners Employed in Entire Auriferous Quartz Mining Industry, 1945 and 1946

Province	1945					1946				
	Mine			Mill		Mine			Mill	
	Surface		Under-ground			Surface		Under-ground		
	Male	Female		Male	Male	Female	Male		Female	Male	Female
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Nova Scotia.....	25	1	41	4	.....	16	1	45	6	.....
Quebec.....	1,365	32	2,030	285	.....	1,847	46	2,472	305	1
Ontario.....	2,971	68	6,454	881	.....	3,661	65	8,052	1,018	.....
Manitoba.....	95	6	91	15	.....	206	9	120	15	.....
Saskatchewan.....	9	1	.....	.....	.....	3	.....	.....	.....	.....
British Columbia.....	390	29	619	170	.....	424	25	657	112	.....
Northwest Territories.....	182	7	27	4	.....	276	8	99	15	.....
Yukon.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....
Canada.....	5,042	144	9,262	1,359	.....	6,433	154	11,445	1,471	1

Table 62.—Cost of Prospecting Conducted by Canadian Auriferous Quartz Mining Companies, 1945 and 1946

Province prospecting was conducted in—(a)	By Quebec companies (b)	By Ontario companies (b)	By Manitoba companies (b)	By Saskatchewan companies (b)	By British Columbia companies (b)	By Yukon and Northwest Territories companies	Total
	\$	\$	\$	\$	\$	\$	\$
1945							
Nova Scotia.....	827	1,069					1,896
New Brunswick.....							
Quebec.....	1,380,656	155,524				11,215	1,547,395
Ontario.....	91,527	1,324,929				6,377	1,422,833
Manitoba.....	6,319	26,173	103,739	4,943		16,512	157,686
Saskatchewan.....				8,778		21,324	30,102
British Columbia.....	46,433	48,487			104,775	47,083	246,778
Northwest Territories.....	40,927	331,375	6,970		740	598,767	978,779
Yukon.....		13,108				51,203	64,311
Total, Canada.....	1,566,659	1,900,665	110,709	13,721	105,515	752,481	4,449,780
1946							
Nova Scotia.....	329						329
New Brunswick.....							
Quebec.....	2,467,116	123,575	2,028		700	22,926	2,616,345
Ontario.....	407,757	1,539,964	11,902		6,663	70,286	2,036,572
Manitoba.....	41,474	35,229	177,773		10,800	33,905	299,181
Saskatchewan.....				2,501	500	16,346	19,347
British Columbia.....	30,264	102,597			387,309	41,820	561,990
Northwest Territories.....	1,803	61,176		1,901		737,882	802,762
Yukon.....		31,754			13,312	35,517	80,583
Total Canada.....	2,948,743	1,894,295	191,703	4,402	419,284	958,682	6,417,109

(a) Prospecting includes the search for new mineral deposits on the surface, and preliminary exploration.

(b) Province in which the companies' principal operations are conducted.

Table 63.—Drilling Completed on Auriferous Quartz Deposits in 1945 and 1946

	Footage Drilled (a)	
	1945	1946
Diamond drilling for exploration (testing)—		
By companies with their own equipment and personnel.....	591,243	571,794
By contractors.....	4,011,223	4,412,958
Other drilling—		
Diamond drilling for breaking rock or ore—		
By companies with their own equipment and personnel.....	134,555	161,363
By contractors.....	420,519	466,153
Drilling by percussion and other machines (b).....	14,649,301	18,156,746

(a) Subject to revision as drilling was not reported by some new companies.

(b) This is not complete as some companies do not compile these data.

The value of diamonds in all forms (bits, etc.) purchased by gold mining companies in 1946 totalled \$345,909.

Table 64.—Specified Taxes Paid by Active Canadian Auriferous Quartz Mines in 1945 and 1946 by Provinces*

Nature of Tax	Nova Scotia	Quebec	Ontario	Manitoba	British Columbia	Northwest Territories	Canada
	\$	\$	\$	\$	\$	\$	\$
1945							
Dominion income tax, including tax on non-operating revenue.....		530,915	2,139,636	72,717	225,152	22,842	2,991,262
Dominion excess profits tax.....		490,003	3,399,707	105,943	248,491	27,251	4,271,395
Provincial taxes.....	581	250,100	295,328	250	110,424	8,081	664,764
Municipal taxes.....	1,125	111,085	184,160	251	5,657	11,200	313,478
Total.....	1,706	1,382,103	6,018,831	179,161	589,724	69,374	8,240,899
1946							
Dominion income tax, including tax on non-operating revenue.....		455,622	1,950,134	70,600	96,040		2,572,396
Dominion excess profits tax.....		374,580	3,160,085	94,998	11,264		3,640,927
Provincial taxes.....	559	278,177	369,862	1,074	82,059	3,757	735,508
Municipal taxes.....	396	151,340	212,366	66	2,925	18,596	385,669
Total.....	955	1,259,719	5,692,447	166,738	192,288	22,353	7,334,500

(*) Does not include complete data relating to taxes that may have been paid by dormant firms.

Table 65.—Certain Specified Expenditures Made by Auriferous Quartz Mining Companies, 1943-1946

Province and Year	Workmen's compensation	Silicosis assessment	Unemployment insurance	Aggregate cost of all supplies purchased	Aggregate cost of plant and equipment purchased	Cost of buildings, machinery and equipment erected or installed
	\$	\$	\$	\$	\$	\$
Nova Scotia.....1943	5,032		1,000	28,508	6,000	(*)
.....1944	4,511		935	30,108	5,290	
.....1945	4,309		1,191	21,732	6,204	200
.....1946	3,044		1,187	43,109	6,855	3,664
Quebec.....1943	276,270	3,864	65,393	4,985,946	392,997	(*)
.....1944	268,668	604	54,237	4,486,519	484,699	514,139
.....1945	333,339	446	52,076	4,873,803	840,504	1,166,339
.....1946	577,507	574	60,671	7,127,669	2,195,574	4,373,899
Ontario.....1943	679,519	562,053	194,002	12,687,037	532,737	(*)
.....1944	629,785	295,269	154,672	11,639,621	571,010	378,286
.....1945	645,288	288,470	142,803	12,172,411	702,336	1,171,712
.....1946	856,306	329,442	175,822	18,785,560	2,312,524	4,086,869
Manitoba.....1943	20,561	4,920	3,264	263,082	18,646	(*)
.....1944	12,492	3,123	2,074	225,705	12,844	20,931
.....1945	15,743	3,487	2,972	296,102	40,792	45,927
.....1946	27,429	6,291	4,275	783,824	1,060,318	403,590
Saskatchewan.....1943	(*)	(*)	(*)	(*)	(*)	(*)
.....1944	379		197	8,820	20,000	25,660
.....1945	587		284	2,160	16,596	11,237
.....1946	44		34		674	
British Columbia.....1943	104,921	104,816	18,092	1,112,819	28,307	(*)
.....1944	114,866	71,630	13,852	1,230,811	30,289	32,415
.....1945	118,157	93,523	15,325	1,266,627	171,105	315,528
.....1946	129,471	106,968	15,448	1,965,146	708,065	661,426
Northwest Territories.....1943	17,206		2,575	451,798	573,969	(*)
.....1944	6,191		850	178,193	18,532	8,852
.....1945	16,854	43	3,679	611,511	164,474	344,443
.....1946	36,692	257	6,661	1,398,783	233,517	666,492
Yukon.....1945	1,014	690	16	2,822		
.....1946						
Total Canada.....1943	1,103,569	675,653	284,326	19,529,190	1,552,656	(*)
.....1944	1,036,892	370,626	226,817	17,799,777	1,142,664	980,283
.....1945	1,135,291	386,659	218,346	19,247,168	1,942,011	3,055,386
.....1946	1,630,493	443,332	264,098	30,104,091	6,517,527	10,195,940

(*) Data not available.

THE COPPER-GOLD-SILVER MINING INDUSTRY

The mining of "copper-gold-silver" ores in Canada during 1946 was confined to the provinces of Quebec, Ontario, Manitoba, Saskatchewan and British Columbia. It is to be noted that in addition to the copper recovered from ores of this type there is a very large quantity of the metal obtained in the smelting and refining of the copper-nickel ores mined in the Sudbury area of Ontario; important quantities of gold and silver are also being extracted from these copper-nickel ores. General statistics relating to labour, etc., in the nickel-copper industry are not included in this report.

Mining operations conducted on Canadian copper-gold-silver deposits (sulphides) during 1946 were reported by 42 firms compared with 38 in 1945 and 23 in 1944. The gross value of crude ore, concentrates, etc., shipped in 1946 from the mines and mills to smelters was estimated at \$54,304,549, the cost of fuel, purchased electricity, process supplies, freight and treatment totalled \$16,870,567, and the net value of shipments was computed at \$37,433,982. Employees in 1946 totalled 4,958 compared with 4,658 in 1945 and 5,175 in 1944.

The gross value of ores shipped by firms which both mine and smelt their own ores is sometimes not reported. This necessitates considerable estimating in determining gross and net values for mine shipments. However, possible abnormal evaluations resulting from this are largely compensated for in determining the value added at the smelters and refineries. This added value is credited to the non-ferrous smelting and refining industry and is also included in the total net value of production of the entire Canadian mining industry. This fact should be noted in making any statistical study of the annual production values shown for shipments from copper-gold-silver mines.

The statistics as herein shown under the copper-gold-silver mining industry refer only to mines and mills and are not inclusive of data pertaining to the operation of smelters and refineries. Statistics relating to the reduction of non-ferrous ores are recorded under the non-ferrous smelting and refining industry.

Quebec

Noranda Mines Limited.—"A total of 789 feet of drifting was done to facilitate the mining of previously known ore, but because of the acute shortage of miners, no exploratory drifting was done and underground exploration was limited to 42,621 feet of diamond drilling on the northerly section of our Adsit claim which adjoins the property of the Quemont Mining Corporation on the east. Most of this diamond drilling was done from the ice surface of Osisko Lake and the unusually early break-up of the ice interrupted this work before much definite information was obtained, so the programme of drilling this area was resumed this winter with four diamond drills.

"During the period from January 1 to November 21, 1946, the smelter treated 752,518 tons of ore, concentrate, slag and scrap brass (shell cases), from which 74,065,031 pounds of anodes were produced. Included in the total material smelted were 250,226 tons of ore, concentrate and scrap which was smelted for other companies on a toll basis. After deducting the copper, gold and silver which was recovered from secondary products, such as slag and scrap brass, the estimated recovery of new metals was 70,378,097 pounds of fine copper, 198,660 ounces of gold and 823,171 ounces of silver.

"During the period from January 1 to November 21, 1946 the concentrator treated 562,034 tons of ore from the Horne mine, from which 107,252 tons of copper-gold concentrate and 134,287 tons of pyrite concentrate were produced. The copper-gold concentrate was sent to the smelter and the pyrite concentrate was treated in the cyanide plant, where 9,354 ounces of gold was recovered by cyanidation, after which it was dried and sold to chemical plants."

Normetal Mining Corporation Ltd.—"Due mainly to shortage of underground workmen, output of the mine was reduced to an average of 511 tons per day, the lowest since 1940. All zinc concentrate produced was shipped to a smelter in the United States. Copper concentrate was shipped until the beginning of the strike at Noranda smelter on November 22 and after that time was stored at the mine. Following is summary of underground development work done during the year: drifts 3,094 feet; crosscuts, 1,517 feet; raises 511 feet; stations and pockets

127 feet; diamond drilling, 9,403 feet. Lateral development on the 2900-foot level was completed and on the 3,050 level about 75 per cent of the necessary work was done. Grade of ore continued to be satisfactory but tonnage per vertical foot is less than at the 2600-foot horizon and on some of the levels above. A series of holes, twelve in number, were diamond drilled below the 3200-foot level. Results from these were disappointing but not conclusive, and plans are being made to sink a winze to approximately the 4000-foot level to more fully explore the lower horizons of the mine."

Queмонт Mining Corporation Ltd.—"Drilling from the ice was under way at the first of the year. Five drills were employed initially. This number was increased to ten, after overburden difficulties had indicated that the footage per drill would be lower than anticipated. The drill holes extended the known ore area and added greatly to the indicated ore tonnage.

"During the summer, one drill was employed on surface drilling of an exploratory nature. As the ice formed again in December the number of drills was increased to six, in order to continue exploration from the ice from where it left off at the break-up.

"During the year, preparations were made for sinking a large capacity production shaft. The site selected is on the point adjacent to the western end of the ore area, across the north-west arm of Osisko Lake from No. 1 shaft. The site was prepared and the shaft sunk 38 feet in rock, prior to commencing foundation work."

Waite Amulet Mines Ltd.—"The tonnage treated in the mill during the year fell off sharply due to the scarcity of manpower, the production of zinc concentrate being severely affected. Mining of the main pillar in the lower "A" orebody commenced in July and it is expected that this operation will continue until the end of 1947 with the result that copper production should improve considerably. After the treatment of 427,400 tons during the year, the ore reserves of Amulet Dufault Mines, Ltd. were reduced by 15 per cent and the ore reserves of the Waite Amulet orebodies were reduced over 40 per cent."

Manitoba and Saskatchewan

Hudson Bay Mining and Smelting Co. Ltd.—"Labour supply became adequate for the first time in several years. Total mine production was maintained at approximately the same rate as in 1945. There were 1,837,742 tons of ore milled during the year, of which 29.6 per cent was hoisted through the north main shaft and 70.4 per cent through the south main shaft. The tonnage of ore milled and the production of slab zinc, gold, silver and cadmium were all somewhat higher than in 1945, while the production of blister copper was only slightly lower.

"Major development and exploration work was increased as the labour situation improved. Drifting and crosscutting in the vicinity of the south main shaft were done on the 3000-3250, 3500 and 3750-foot levels. The south main shaft was sunk a distance of 369 feet full size from the 3631-foot level to the 4000-foot level, an 84-foot rock pentice being temporarily left below the 3500-foot level."

Sherritt-Gordon Mines Ltd.—"The exhaustion of the mine at Sherridon is now proceeding at a rate which should permit the plant being released in time to be used in equipping our new nickel-copper mines for production. The East Mine was finally exhausted during the latter part of the year and part of this mining plant has already been shipped to Lynn Lake for use in sinking the first shaft. The West Mine will be worked at capacity, which is about 500,000 tons per year, throughout the present year. After that the tonnage will taper off over a two- or three-year period. Some parts of the plant can be dismantled and moved to Lynn Lake as required, before the final clean-up of the mine at Sherridon is completed.

"The results of the past year's exploration work at the Granville Lake area have been most gratifying. The bulk of the work was concentrated upon our nickel-copper property at Lynn Lake, where by the end of the year approximately 5,000,000 tons of ore averaging 1.18 per cent nickel and 0.60 per cent copper had been proven by closely spaced diamond drill holes, in three orebodies, to a depth of about 1,000 feet. As all three orebodies are quite strong at that horizon it is a reasonable assumption that a considerable additional tonnage will be developed at greater depths."

British Columbia

Britannia Mining and Smelting Co. Ltd.—"On July 3rd a strike was called by the Mine, Mill and Smelter Workers' Union simultaneously at all producing copper and gold properties operating in British Columbia. Operations were resumed on October 21st, but as the organization was widely scattered, production did not begin until November 5th. Production which started after the strike at 1,800 tons, has been increased steadily and was at a level of 3,000 tons per day at the year's end. With a continuation of the present favourable price level for copper, and barring unexpected difficulties with labour, the general outlook at this property is better than at any time during the past several years."

Granby Consolidated Mining, Smelting and Power Co. Ltd.—"During the year, 597,678 tons of ore was milled at the property located at Copper Mountain. The milled ore produced 20,007 tons of concentrates which has a metal content of 2,487 ounces of gold, 76,116 ounces of silver and 10,628,042 pounds of copper. The concentrates were exported to the smelter at Tacoma, Washington."

NOTE.—The preceding quotations were extracted from the annual reports of the firms named.

Table 66.—Principal Statistics (a) of the Copper-Gold-Silver Mining Industry in Canada for Specified Years

Year	Number of active operators (b)	Number of operating plants or mines (b)	Capital employed (b)	Number of employees (b)	Salaries and wages (b)	Cost of fuel and electricity (b)	Value of ores and concentrates shipped by mines
			\$		\$	\$	\$
1936.....	19	21	40,732,717	3,738	5,473,325	495,843	15,619,897
1937.....	28	31	73,338,258	5,164	8,240,614	901,088	24,902,851
1938.....	37	39	65,416,729	5,577	8,921,465	1,100,284	28,795,492
1939.....	28	30	58,867,620	6,083	9,920,591	1,223,523	26,182,577
1940.....	25	26	60,446,948	6,115	10,777,827	1,297,454	25,804,419
1941.....	21	22	81,521,902	5,866	10,695,023	1,264,567	30,220,331
1942.....	26	28	84,776,243	5,646	11,097,412	1,338,737	33,688,642
1943.....	20	22	94,750,186	5,748	11,806,827	1,426,710	43,840,679
1944.....	23	26	(c)	5,175	10,710,071	1,402,243	38,198,039
1945.....	38	41	(c)	4,658	9,663,612	1,175,916	38,165,269
1946.....	42	44	(c)	4,958	10,244,487	1,152,925	37,433,982

(a) Data relating to idle mines and smelters not included.

(b) Not including data relating to any Rossland properties leased by Consolidated Mining and Smelting Co. of Canada Ltd.

(c) Not reported.

NOTE.—The cost of fuel, purchased electricity and process supplies was deducted; however, values are less freight and estimated treatment charges. Also, value of ores and concentrates shipped from mines to smelters operated by the same companies are often of a nominal or conjectural nature.

Table 67.—Shipments from Copper-Gold-Silver Mines of Canada, 1945 and 1946

—	Quantity	Value	Total Metal Content as Determined by Settlement Assay (c)				
			Gold	Silver	Copper	Sulphur	Zinc
	tons	\$	fine oz.	fine oz.	pounds	tons	pounds
1945							
11 mines shipped to Canadian plants (a)—							
Ores.....	518,902	8,594,812	74,200	593,058	41,044,522		
Copper concentrates.....	646,079	31,466,061	229,695	2,378,694	172,606,419		
Zinc concentrates.....	140,826	7,111,328	5,812	161,511	1,476,682		105,771,054
Iron pyrites concentrates.....	71,067	152,603				35,002	
Slags, residues, gold precipitates and bullion.....	325	1,241,062	30,094	182,636	12,382		
8 mines shipped to foreign plants—							
Ores.....							
Copper concentrates.....	52,742	4,140,213	14,267	174,272	25,967,476		(d)1,511,353
Zinc concentrates.....	91,845	6,139,799	554	14,705			94,831,659
Iron pyrites concentrates.....	156,667	329,608				75,201	
Precipitates.....	698	124,386			963,905		
Total.....	1,679,151	59,299,872	354,622	3,504,876	242,071,386	110,303	200,602,713
Value of process supplies, etc. (b).....		21,134,603					
Net Value.....		38,165,269					

For footnotes, see end of table, p. 153.

Table 67.—Shipments from Copper-Gold-Silver Mines of Canada, 1945 and 1946
—Concluded

—	Quantity	Value	Total Metal Content as Determined by Settlement Assay (c)				
			Gold	Silver	Copper	Sulphur	Zinc
	tons	\$	fine oz.	fine oz.	pounds	tons	pounds
1946							
8 mines shipped to Canadian plants (a)—							
Ores.....	409,586	5,045,788	83,920	168,485	14,266,861		
Copper concentrates.....	623,152	31,000,561	214,252	2,615,150	166,971,148		
Zinc concentrates.....	158,538	9,107,497	7,184	201,686	1,477,494		145,034,100
Iron pyrites concentrates.....	154,323	298,027				73,953	
Slags, residues, bullion and gold precipitates.....	358	1,215,129	27,678	198,750	272,959		
7 mines shipped to foreign plants							
Ores.....							
Copper concentrates.....	34,892	3,212,765	7,287	104,647	17,443,833		
Zinc concentrates.....	61,587	4,268,237					63,746,167
Iron pyrites concentrates.....	47,612	104,307				22,585	
Precipitates.....	302	52,238			338,656		
Total.....	1,490,350	54,304,549	340,321	3,288,718	200,770,951	96,538	208,780,267
Value of process supplies, etc. (b)		16,870,567					
Net Value.....		37,433,982					

(a) Certain mines, sometimes operated in Rossland area by several leases, are usually treated, statistically, as one mine.

(b) Includes freight on ore shipments, smelter charges and purchased electricity.

(c) In addition, cadmium, tellurium and selenium are recovered from these ores.

(d) Lead.

Table 68.—Content of Ores, Concentrates, Etc., Shipped from Copper-Gold-Silver Mines, 1941-1944

—	Tons	Content				
		Gold	Silver	Copper	Zinc	Sulphur
		fine oz.	fine oz.	pounds	pounds	tons
TO CANADIAN SMELTERS						
1941—						
Copper ore.....	865,921	159,647	320,994	22,516,954		
Copper concentrates.....	828,622	296,302	4,282,053	240,003,806	3,138,594	
Zinc concentrates.....	135,582	6,263	212,115	1,246,645	125,006,638	
Pyrite.....	94,818					45,446
Slag, precipitates, etc.....	189	28,893	113,299	162,553	68,337	
1942—						
Copper ore.....	760,973	146,412	318,805	28,927,383		
Copper concentrates.....	816,793	342,995	4,700,629	234,276,099		
Zinc concentrates.....	172,519	11,424	293,259	1,409,389	159,543,348	
Pyrite.....	69,014					32,580
Slag, precipitates, etc.....	193	35,146	227,776	129,659		
1943—						
Copper ore.....	772,641	148,995	373,215	38,948,373		
Copper concentrates.....	820,759	320,512	4,502,041	230,639,502		
Zinc concentrates.....	181,032	12,397	310,210	1,656,227	167,005,660	
Pyrite.....	65,395					32,116
Slag, precipitates, etc.....	198	36,749	240,302	151,001		
1944—						
Copper ore.....	530,579	79,516	508,091	35,392,376		
Copper concentrates.....	757,837	253,193	3,061,569	204,189,160		
Zinc concentrates.....	149,522	8,318	227,036	1,508,641	137,386,498	
Pyrite.....	68,064					33,178
Slag, precipitates, etc.....	366	34,625	193,697	266,486		

Table 68.—Content of Ores, Concentrates, Etc., Shipped from Copper-Gold-Silver Mines, 1941-1944—Concluded

	Tons	Content				
		Gold	Silver	Copper	Zinc	Sulphur
		fine oz.	fine oz.	pounds	pounds	tons
To FOREIGN SMELTERS						
1941—						
Copper ore.....	21	5	72	865		
Copper concentrates and precipitates.....	145,549	49,802	430,563	68,313,890		
Zinc concentrates.....	51,983	471	47,051	397,450	57,515,573	
Pyrite.....	208,542					103,762
1942—						
Copper ore.....						
Copper concentrates and precipitates.....	101,752	19,892	283,596	50,619,295	94,931,818	
Zinc concentrates.....	92,135					
Pyrite.....	310,479					150,199
1943—						
Copper ore.....						
Copper concentrates and precipitates.....	94,714	20,410	299,753	45,227,248		
Zinc concentrates.....	131,418	85	3,797		134,809,240	
Pyrite.....	219,181					107,339
1944—						
Copper ore.....						
Copper concentrates.....	84,920	18,194	306,198	39,940,660		943,067*
Zinc concentrates.....	125,465	421	11,575		128,873,442	
Pyrite.....	182,007					88,595
Slag, precipitates, etc.....	570	3	69	705,277		

* Lead.

Table 69.—Classification of Wage-Earners Employed in the Copper-Gold-Silver Mining Industry, by Provinces, 1944-1946

Year	Surface		Under-ground	Mill		Total	
	Male	Female	Male	Male	Female	Male	Female
Total Canada 1944.....	1,389	145	2,254	689	76	4,332	221
Total Canada 1945.....	1,314	85	1,919	653	62	3,886	147
1946							
Quebec.....	487	9	741	177	13	1,405	22
Ontario.....	6					6	
Manitoba.....	356	21	363	72	1	791	22
Saskatchewan.....	734	9	502	154	1	1,390	10
British Columbia.....	196	22	303	205	11	704	33
Total Canada.....	1,779	61	1,909	608	26	4,296	87

Table 70.—Specified Data Relating to the Copper-Gold-Silver Mining Industry, 1931-1946*

Year	Wage- earners	Wages paid	Average per capita wages paid	Salaried employees	Salaries paid	Total salaries and wages
	No.	\$	\$ (†)	No.	\$	\$
PRODUCING MINES—						
1931.....	2,901	4,140,890	1,427	160	465,603	4,606,493
1932.....	2,900	3,392,322	1,170	131	328,079	3,720,401
1933.....	2,590	3,550,417	1,371	123	275,650	3,826,067
1934.....	2,878	4,357,517	1,514	168	413,127	4,770,644
1935.....	2,946	4,144,095	1,407	207	473,988	4,618,083
1936.....	3,328	4,608,774	1,385	308	708,200	5,316,974
1937.....	4,618	7,019,595	1,520	436	1,058,082	8,077,677
1938.....	5,051	7,694,141	1,523	418	1,075,014	8,769,155
1939.....	5,401	8,498,360	1,573	470	1,126,561	9,624,921
1940.....	5,605	9,434,060	1,683	479	1,313,509	10,747,569
1941.....	5,324	9,249,863	1,737	524	1,428,993	10,678,856
1942.....	4,945	9,442,054	1,909	608	1,524,584	10,966,638
1943.....	5,042	9,931,712	1,970	629	1,764,200	11,695,912
1944.....	4,539	8,927,879	1,967	602	1,721,494	10,649,373
1945.....	3,936	7,788,083	1,966	583	1,608,225	9,396,308
1946.....	4,105	7,865,062	1,916	531	1,656,938	9,522,000
Total.....		110,044,824			16,942,247	126,987,071
NON-PRODUCING MINES—						
1931.....	224	256,204		66	95,620	351,824
1932.....	33	27,439		12	22,787	50,226
1933.....	92	81,998		36	30,713	112,711
1934.....	87	65,485		36	33,672	99,157
1935.....	248	367,685		29	54,428	422,113
1936.....	84	119,084		18	37,267	156,351
1937.....	84	126,155		26	36,782	162,937
1938.....	93	129,246		15	23,064	152,310
1939.....	186	256,909		26	38,671	295,670
1940.....	18	18,746		13	11,512	30,258
1941.....	12	10,449		6	5,718	16,167
1942.....	71	107,532		22	23,242	130,774
1943.....	51	79,818		26	31,097	110,915
1944.....	14	20,348		20	40,350	60,698
1945.....	97	180,861		42	86,443	267,304
1946.....	278	601,289		44	121,198	722,487
Total.....		2,449,338			692,564	3,141,902

(*) Not including smelters or refineries.

(†) Including any bonus paid.

Table 71.—Specified Data Relating to the Copper-Gold-Silver Mining Industry, 1931-1946 (a)

Year	Producing Mines						Non-producing Mines			
	Electricity purchased	Total cost of purchased fuel and power used	Hydraulic turbines used	Process supplies used	Freight on ore, etc., shipped	Smelter treatment charges	Electricity purchased	Total cost of purchased fuel and power used	Hydraulic turbines used	Process supplies used
	k.w.h.	\$	h.p.	\$	\$	(b) \$	k.w.h.	\$	h.p.	\$
1931.....	225,088,928	709,614	9,300	(c)	(c)	(c)	311,800	16,888	1,159	(c)
1932.....	127,331,868	446,736	9,300	(c)	(c)	(c)	1,584,700	16,727	609	(c)
1933.....	68,188,303	387,312	9,300	(c)	(c)	(c)	453,000	17,313	609	(c)
1934.....	90,097,659	526,941	9,300	(c)	(c)	(c)	1,108,500	15,729	.....	(c)
1935.....	91,828,181	520,724	9,300	2,892,443	(c)	(c)	1,108,500	13,428	.....	6,689
1936.....	71,134,263	441,132	9,300	3,127,527	(c)	(c)	2,253,803	54,711	.....	28,698
1937.....	199,045,597	871,002	9,300	4,808,504	344,818	9,735,199	.....	30,086	.....	43,341
1938.....	214,930,438	1,049,325	9,300	4,746,830	960,791	13,639,953	5,501,100	50,959	609	96,833
1939.....	247,180,650	1,203,878	8,900	5,539,545	1,582,350	16,587,402	2,119,520	19,645	1,250	46,071
1940.....	270,601,445	1,297,454	8,900	5,812,178	882,633	17,378,092	.....	.....	.....	.....
1941.....	251,488,789	1,264,533	10,520	5,504,530	1,873,728	25,964,492	.....	34	.....	1,425
1942.....	259,238,497	1,333,969	8,900	5,682,271	1,932,958	26,483,998	108,000	4,768	.....	21,184
1943.....	269,523,279	1,413,989	8,900	5,493,875	1,353,139	21,409,079	.....	12,721	.....	12,840
1944.....	282,411,942	1,401,935	8,900	5,170,105	720,920	16,898,032	.....	308	.....	476
1945.....	243,557,533	1,154,097	8,900	4,870,144	1,240,533	13,800,559	443,000	21,819	.....	.....
1946.....	280,558,741	1,094,763	8,900	3,917,734	939,213	10,755,921	4,411,365	58,162	.....	104,774

(a) Not including smelters or refineries.

(b) Partly conjectural.

(c) Not available.

Table 72.—Taxes Paid by the Copper-Gold-Silver Mining Industry in Calendar Years 1945 and 1946

	1945	1946
	\$	\$
Dominion income tax, including tax on non-operating revenue.....	3,245,130	3,219,764
Dominion excess profits tax.....	6,086,445	4,967,843
Provincial tax.....	1,617,992	1,788,132
Municipal tax.....	305,760	264,911
Grand Total Taxes Paid.....	11,255,327	10,240,650

Table 73.—Specified Expenditures by the Copper-Gold-Silver Mining Industry, 1944-1946

	1944	1945	1946
	\$	\$	\$
Workmen's compensation.....	409,782	412,603	495,645
Silicosis assessment.....	86,744	96,004	91,082
Unemployment insurance.....	75,832	66,238	67,076
Aggregate cost of all supplies purchased.....	6,065,754	8,314,676	8,710,123
Aggregate cost of plant and equipment purchased.....	989,675	434,764	1,174,342
Cost of buildings, machinery and equipment erected or installed during year.....	1,304,542	424,066	1,845,259

Table 74.—Cost of Prospecting Conducted by the Copper-Gold-Silver Mining Industry, by Provinces, 1945 and 1946

	1945	1946		1945	1946
	\$	\$		\$	\$
Conducted in—			Conducted in—		
Nova Scotia.....	1,769		Saskatchewan.....	2,875	8,257
New Brunswick.....	4,525		British Columbia.....	93,139	41,946
Quebec.....	35,687	319,395	Yukon.....		
Ontario.....	145,736	55,134	Northwest Territories.....	1,399	40
Manitoba.....	87,905	465,078	Total.....	373,035	889,850

Table 75.—Ores Mined, Milled, and Concentrates Produced by the Copper-Gold-Silver Mining Industry, 1930-1946

Year	Ore mined	Ore milled	Copper concentrates produced (d)	Zinc concentrates produced	Iron pyrites concentrates produced	Net value of all estimated mine and mill shipments (c)
	tons	tons	tons	tons	tons	\$
1930.....	5,768,664	4,926,431	298,085	72,112	53,453	(a) 15,629,564
1931.....	6,002,865	5,243,382	469,059	63,828	63,293	(a) 15,951,103
1932.....	5,453,173	4,607,659	518,609	76,507	71,945	(a) 11,143,759
1933.....	5,443,690	4,521,301	521,399	88,645	59,354	(a) 7,707,270
1934.....	6,065,692	5,127,189	587,045	81,811	80,684	(a) 8,265,071
1935.....	5,650,665	4,693,387	614,942	96,466	66,700	(a) 16,676,447
1936.....	5,032,222	4,091,570	503,650	101,303	105,669	(a) 19,271,965
1937.....	6,749,309	5,802,031	630,664	116,698	201,494	(b) 30,655,734
1938.....	7,929,434	6,961,188	756,065	123,887	173,444	(b) 34,739,439
1939.....	8,474,855	7,760,725	828,963	105,842	161,238	(b) 32,991,716
1940.....	8,931,291	8,325,979	930,622	126,346	172,500	(b) 34,914,051
1941.....	9,263,071	8,402,656	974,250	187,622	309,050	(b) 36,990,853
1942.....	8,575,626	7,816,813	858,580	264,739	219,874	(b) 40,730,834
1943.....	8,251,579	7,482,831	914,360	315,670	292,007	(b) 50,774,104
1944.....	7,395,608	6,873,542	870,726	276,737	257,423	(b) 44,770,863
1945.....	5,914,580	5,441,121	730,724	229,980	228,618	(b) 44,258,780
1946.....	5,009,490	4,606,503	661,554	219,985	201,873	(b) 42,609,415

(a) Value f.o.b. mine and presumed gross value less freight and treatment charges which were not reported separately by operators prior to 1937.

(b) Gross value reported by operators less only freight and treatment costs deducted by Dominion Bureau of Statistics.

(c) Includes the value of any cyanide precipitate shipped from mills to smelters.

(d) Exclusive of copper precipitate 1943-1946.

Table 76.—Drilling Completed on Copper-Gold-Silver Deposits in Canada, 1945 and 1946

	Footage Drilled	
	1945	1946
Diamond drilling for exploration (testing only)—		
By mining companies with their own personnel and equipment.....	76,089	71,786
By diamond drilling contractors.....	319,515	381,898
Other diamond drilling—		
Blast hole diamond drilling—		
By mining companies with their own personnel and equipment.....	517,940	700,436
By diamond drilling contractors.....	310,446	
Drilling by percussion or other machines(*).....	3,778,401	2,829,740

(*) Not complete as these data are not recorded by some operators.

Table 77.—Ore Reserves of Specified Copper-Gold-Silver Mining Companies*

	Tons	Copper	Zinc	Gold	Silver
		per cent	per cent	ounces per ton	ounces per ton
Noranda Mines Ltd., January 1, 1947—					
Indicated above the 2,975 foot level—					
Sulphide ore over 4 per cent copper.....	4,960,000	7.14		0.159	(x)
Sulphide ore under 4 per cent copper.....	14,692,000	0.67		0.196	(x)
Silicious fluxing ore.....	838,000	0.11		0.108	(x)
Capacity of mill: 24 hours.....	3,000				
Waite Amulet Mines Ltd., December 31, 1945—					
Waite Mine—					
Copper ore.....	40,000	4.5		0.04	0.5
Zinc ore.....	5,000		9.5		
Other Waite Amulet orebodies—					
"F" orebody.....	30,000	3.2	9.9	0.01	1.01
"C" shaft orebodies.....	24,000	2.0	9.07	0.02	4.0
Amulet Dufault—					
Lower "A" orebody.....	1,865,739	6.0	4.01	0.045	1.5
Upper "A" orebody.....	132,000	2.0	6.5	0.07	1.6
Capacity of mill: 24 hours.....	1,800				
Normetal Mining Corp. Ltd., December 31, 1946.....	1,716,000	3.68	7.28	0.033	2.66
Capacity of mill: 24 hours.....	750				
Sherritt Gordon Mines Ltd., December 31, 1946—					
East orebody—					
Zinc ore.....					
Copper ore.....					
West orebody.....	1,368,000	2.60	2.12	0.021	0.61
Capacity of mill: 24 hours.....	750				w
Hudson Bay Mining & Smelting Co. Ltd., January 1, 1946.....	26,000,000	2.99	4.24	0.089	1.25
Capacity of mill: 24 hours.....	6,000				
Granby Cons. Mining, Smelting & Power Co. Ltd., 1946.....	9,982,000	1.25		(x)	(x)
Capacity of mill: 24 hours.....	5,000				
Britannia Mining & Smelting Co. Ltd.....			(x)		
Capacity of mill: 24 hours.....	6,000				

(*) Subject to revision.

(x) Not reported.

ROYAL CANADIAN MINT

The Ottawa Mint, established as a branch of the Royal Mint under the (Imperial) Coinage Act, 1870, and opened up on January 2, 1908, was by 21-22 Geo. V, c. 48, constituted a branch of the Department of Finance and since December 1, 1931, has operated as the Royal Canadian Mint. The great development of the gold mining industry in Canada has resulted in gold refining becoming one of the principal activities of the Mint. Gold coins have never been a popular medium of exchange in Canada and have not been struck since 1919, most of the fine gold produced from the rough shipments from the mines being delivered to the Bank of Canada in the form of bars, the rest being sold in convenient form to manufacturers.

The domestic gold currency of Canada, as at present authorized by the Currency Act, consists of \$20, \$10, \$5 and \$2½ gold pieces, 900 millesimal fineness (only \$10 and \$5 have been issued). Gold was used only to an insignificant extent as a circulating medium in Canada, its monetary use being practically confined to reserves; \$5 and \$10 gold pieces weighing respectively 129 and 258 grains, 9/10ths pure gold by weight, have been coined, the Canadian gold dollar thus containing 23.22 grains of pure gold. The \$5, \$10 and \$20 gold coins of the United States, which contain exactly the same weight of gold as Canadian gold coins of these denominations, are legal tender for their face value only, as are the British sovereigns, which are legal tender for \$4.86 2/3, their equivalent in Canadian gold dollars.

The regulations in part for the receipt of gold bullion at the Royal Canadian Mint, Ottawa, are as follows: Each parcel of bullion for which a separate assay is required shall be regarded as a separate deposit, and no ingot exceeding 1,500 ounces troy, gross weight, will be accepted. All deposits shall be dealt with in the order in which they are received. Deposits containing, by assay, less than 200 parts of gold in 1,000, or appearing, either before or after melting and assaying, to be unsuitable for treatment by the refining process in use, may be rejected. A deposit so rejected shall be returned to the depositor on payment by him of any costs incurred for melting and assaying.

The Mint charges, to be calculated on the gross weight of the deposit after melting, shall be as follows:

(a) For melting and assaying—one dollar for the first four hundred ounces or part thereof and twenty-five cents for each additional one hundred ounces or part thereof.

(b) For refining—when the deposit contains not more than 5 per cent base metal, 3 cents the ounce;

over 5 per cent but not over 10 per cent base metal, 3½ cents the ounce;

over 10 per cent but not over 15 per cent base metal, 4½ cents the ounce;

over 15 per cent but not over 20 per cent base metal, 5 cents the ounce;

on deposits which contain over 20 per cent base metal, or which require other treatment, a charge not exceeding 10 cents the ounce, to be determined by the cost of treatment.

The minimum charge for refining shall be two dollars for each deposit and the charge for refining shall apply to all deposits containing by assay less than 995 parts fine gold in 1,000.

A handling charge at the rate of 20 cents the ounce fine, to cover costs of realization in a market outside Canada, shall be made on all newly-mined Canadian gold deposited with the Mint, and this charge shall be increased to \$1.00 the ounce fine on all other gold accepted as a deposit. The charges under this paragraph are in addition to the Mint charges payable under Clause 5 of the Mint Regulations and are effective on and after July 27, 1946.

The gross value of gold deposited for sale with the Royal Canadian Mint or the Dominion of Canada Assay Office, Vancouver, shall be the market price of gold in the country to which the Government is at the time of the receipt of the deposit exporting gold, converted into Canadian funds at the average of the buying rates of exchange of that country reported to the Department of Finance by the Bank of Canada at 11 a.m. daily during the week in which the gold is deposited with the Mint or Assay Office.

In addition to newly-mined Canadian gold there may be accepted at the Mint, (gold over 1 ounce troy fine) in the following forms: old jewellery and dental scrap, provided it has not been

melted or otherwise treated in any way to prevent its origin being readily recognized; scrap from manufacturers and refiners the result of processes carried out by them in the ordinary course of their business; gold coin which, when of full weight and fineness, is not legal tender in Canada. Satisfactory evidence as to the origin of the gold shall be furnished by the depositor if required.

Delivery of deposits shall be accepted at the Mint counter only, free of all charges, and when bullion is forwarded by mail or express the original packages will not ordinarily be opened until an invoice of the description and weight of their several contents has been received. When there is a serious discrepancy between the actual and the invoice weights of any deposit, further action in regard to it will be deferred pending communication with depositor.

The gross value of a deposit shall be calculated at a rate of one dollar for each 23.22 grains fine gold contained therein (equivalent to \$20.6718+ the ounce fine) and at a rate for all silver in excess of one per centum of the weight of the deposit after melting to be determined by the Minister of Finance. The rate to be paid, under Clause 4 of the Regulations, for silver in excess of one per centum of the weight of deposits received in any week, shall average for that week of the official New York daily quotation for fine silver, from Monday to Friday, inclusive, converted into Canadian funds at the average of the Foreign Exchange Control Board's buying rate for United States funds. This Instruction shall become effective for the week commencing Monday, December 9, 1946.

COINAGE

There was a decrease of \$2,594,100 in the amount of coin issued during 1946 as compared with the previous year. A detailed statement of the issues by denominations for the years 1945 and 1946 is set out below.

Denomination	Coin issued in	
	1945	1946
	\$	\$
Silver coin—		
1 dollar.....	38,300	91,000
50 cents.....	980,000	400,000
25 cents.....	1,324,000	556,000
10 cents.....	1,074,000	654,000
Total Silver.....	3,416,300	1,701,000
Nickel coin—		
5 cents.....		201,500
Steel coin—		
5 cents.....	950,300	
Bronze coin—		
1 cent.....	748,500	528,500
Total.....	5,115,100	2,521,000
	Number of pieces	
Representing.....	111,890,300	68,335,000

Distribution of the coin issued to the various Agencies of the Bank of Canada was as follows:

	Silver				Nickel	Bronze
	Dollar	50 cents	25 cents	10 cents		
	\$	\$	\$	\$	\$	\$
Calgary.....	2,000	10,000	28,000	40,000	40,000	38,300
Charlottetown.....		8,000	28,000	14,000	3,500	6,500
Halifax.....	4,000	50,000	76,000	54,000	28,000	26,000
Montreal.....	16,000	6,000	92,000	122,000	49,000	111,000
Ottawa.....	13,000	6,000	66,000	20,000	12,000	12,100
Regina.....	4,000	94,000	38,000	58,000	33,000	43,000
Saint John.....	2,000	2,000	34,000	28,000	11,000	25,500
Toronto.....	42,000	188,000	144,000	230,000	70,000	189,600
Vancouver.....	2,000	36,000		34,000	42,000	35,500
Winnipeg.....	6,000		50,000	54,000	3,000	41,000
Total.....	91,000	400,000	556,000	654,000	291,500	528,500

Worn and mutilated coin withdrawn from circulation:

	Withdrawn	Net Increase in Circulation
	\$ cts.	\$ cts.
Silver coin.....	84,040 45	1,616,959 55
Nickel coin—5 cents (mutilated only).....	1,634 15	289,865 85
Tombac coin—5 cents.....	251,670 15	
Steel coin—5 cents.....	320 75	
Bronze coin.....	3,216 23	525,283 72

GOLD BULLION

Three thousand, five hundred and seventy-six deposits of gold bullion were received at the Mint during the year from Canadian Mining Companies, the Dominion of Canada Assay Office, Vancouver, and sundry persons. The gross weight of the deposits amounted to 3,271,246 ounces, containing, by assay 2,652,245 ounces fine gold and 372,595 ounces fine silver. The receipts show an increase as compared with the year 1945 of 171 in the number of deposits, gross weight 168,255 ounces, gold content 148,828 ounces fine and fine silver 14,856 ounces.

The net amount paid by cheque to depositors was \$94,662,727.75. In addition 14,521·432 ounces of fine gold with a statutory value of \$300,184.74 was also issued in payment of gold deposits.

Postage collected for the Postmaster General on deposits shipped by mail, postage collect, amounted to \$10,671.52.

Details of the origin of the bullion deposited at Vancouver and Ottawa are shown in the following table.

Source	Gross Weight	Fine Gold	Fine Silver
	ounces	ounces	ounces
From Canadian Mines and Refineries—			
Ontario.....	2,088,834·000	1,699,440·377	237,409·80
Quebec.....	850,325·800	700,867·647	93,275·29
British Columbia.....	103,655·105	87,683·119	14,703·67
Manitoba.....	94,030·900	75,575·704	6,523·98
Yukon.....	56,440·940	45,282·908	9,416·94
Nova Scotia.....	4,670·200	4,320·912	144·32
Northwest Territories.....	30,068·400	21,119·923	5,793·21
Alberta and Saskatchewan.....	146·640	110·825	12·90
Total from Mines and Refineries.....	3,233,171·985	2,634,401·415	367,280·11
From Jewellery and Scrap.....	41,310·430	19,221·236	5,675·18
Grand Total.....	3,274,482·415	2,653,622·651	372,955·29

A detail of the fine gold issued in the form of trade bars to the Bank of Canada, and granulated, sweep and medals to sundry persons is shown hereunder—

	Ounces Fine
6,304 Trade bars to Bank of Canada.....	2,522,853·880
Depositors.....	14,521·432
Sales to manufacturers.....	119,044·048
Proof plate.....	1·500
Medals.....	5·443
Sweep.....	9,538·460
	2,665,964·763

This total shows an increase of 166,801·089 ounces fine as compared with the year 1945.

Summary of Transactions in Gold Bullion of the Ottawa Branch of the Royal Mint from its opening on the 2nd January, 1908, to its disestablishment on the 30th November, 1931, and of the Royal Canadian Mint from the 1st December, 1931, to the 31st December, 1946

Year	Gold Received		Gold Issued		
	Gross Weight	Value (Statutory) Gold only	Coin	Bullion	Statutory Value Coin and Bullion
	ounces	\$	\$	fine oz.	\$
1908 to 1936.....	53,910,494-021	910,817,142-05	7,923,878-73	43,634,524-862	909,929,577-75
1937.....	4,959,970-893	81,311,693-73		3,937,910-698	81,403,837-11
1938.....	5,601,260-642	90,920,063-13		4,308,067-369	89,055,654-13
1939.....	6,181,336-290	100,656,105-55		4,834,214-285	99,932,075-82
1940.....	6,295,218-554	103,169,907-38	30-00	5,026,792-728	103,913,055-43
1941.....	6,444,056-215	105,273,560-67		5,134,347-805	106,136,385-78
1942.....	5,761,045-973	95,338,135-90		4,611,892-227	95,336,270-79
1943.....	4,456,437-559	74,769,168-35		3,645,739-964	75,364,131-92
1944.....	3,537,734-636	59,163,794-79		2,829,755-000	58,496,226-17
1945.....	3,102,991-020	51,750,218-87		2,499,163-674	51,662,297-22
1946.....	3,271,246-445	54,826,765-59		2,665,964-763	55,110,381-61
Total.....	103,521,792-248	1,727,996,619-01	7,923,908-73	83,128,373-375	1,726,339,873-73

BUREAU OF MINES, OTTAWA, EQUIPPED TO SERVE CANADA'S GOLD INDUSTRY

(BUREAU OF MINES, OTTAWA, CANADA)

The anticipated expansion in the industry is of special interest to the Bureau of Mines in Ottawa, for if past experience can be used as a guide, the facilities of its Ore Dressing and Extractive Metallurgy Laboratories will be used to work out treatment processes for most of the milling plants that come into operation. Prior to 1941, by far the greater part of the work in the Laboratories was on gold ores from mining areas throughout the Dominion. Gold production had been increasing steadily and for several years in succession the annual value of gold output exceeded that of all the other metals. From 20 to 30 milling plants were entering production each year, and even though additions had been made to its facilities, the Bureau found it difficult at times to handle the many requests for test work on gold ores. To an increasing extent the ores received were refractory, containing either arsenopyrite or pyrite, and frequently such ores require roasting to liberate the gold. Even then the gold recovery is often in the neighbourhood of 90 per cent, compared with recoveries of 95 per cent or higher in the case of ores free of arsenic and pyrite.

Ores from several of the gold prospects which have been receiving active exploratory attention are known to be refractory to a varying degree and thus the experience gained by the Bureau in working out treatment methods for these types of ores will be of particular advantage. For its work on gold and other metallic ores, the Bureau has all the necessary equipment for small and large-scale tests, and the layout allows for flexibility in the devising of flow sheets. For large-scale work the equipment includes a sampling plant with a capacity of four tons an hour; two large grinding units with classifiers; three batteries of flotation machines; small ball mill units for use in grinding middlings; a gravity concentrative section with a full deck Wilfley table and three tables of quarter deck size; a pair of jigs; magnetic concentrating equipment, comprising various types of high and low intensity separators; a sink-and-float pilot plant; a precipitating unit; and a small cyanide plant with four agitators and thickeners and drum type filter and accessories. Fully equipped laboratories are also maintained for assay, chemical, microscopic and spectroscopic analyses.

Samples of ores from a few hundred pounds to 50 tons or more are accepted for investigative work, and a staff of engineers undertakes the development of the most economic method of treatment, and prepares a report detailing the results that may be anticipated and a flow sheet by which such results may be attained. The samples originate from prospectors; prospecting and mining syndicates; the mining companies that develop the properties to a stage where a milling plant is erected; consulting engineers; contractors who design and erect the plants; and operating companies who may be experiencing difficulties in their extraction methods, or who are endeavouring to improve their methods of treatment.

Conditions governing the shipment and acceptance of samples of ores, minerals and metallurgical products for examination and test are as given below.

The application should state the exact location of the property from which the sample was taken and the nature of the test work desired.

Samples should be representative of the grade and character of the ore that it is proposed to treat. According to the nature and scale of the tests desired, the size of the sample should be within the following ranges:

1. For examination and identification of the mineral constituents only—from a few pounds up to 100 pounds.
2. For examination and preliminary tests—100 pounds to 1,000 pounds.
3. For examination, preliminary tests, and for small-scale continuous tests—2 to 5 tons.
4. For large-scale continuous tests on tonnage check basis—5 tons to carload lots.

All samples under two tons in weight must be bagged and properly tagged. Two tons or over may be shipped in bulk if desired.

All transportation charges must be paid by the shipper. These charges must be prepaid, except on shipments from points where there is no Agent, in which case the Bureau of Mines will pay and will bill the shipper for the amount. No examination or test work will be made until reimbursement of such payment is made.

In addition to the transportation charges, the shipper of bulk or tonnage samples intended for analysis only must pay a fee based on the size of the bulk sample and on the elements determined. This fee is payable in advance of submittal of the report of the analysis.

Information regarding the results of any work undertaken in the Laboratories, whether contained in a report or in related correspondence shall not be used as publicity or advertising matter for the sale of shares in any promotion.

Shipments should be addressed to "The Ore Dressing and Extractive Metallurgy Laboratories, Bureau of Mines, 552 Booth Street, Ottawa, Canada".

Co-operation of the shipper's representative and consulting engineers in doing the test work is welcomed, and in this connection it may be noted that the facilities of the Laboratories have been used at various times by several mining companies in working out some particular problem or process, using their own staff, with the guidance of the Bureau's engineers.

Although research and investigative work in ore dressing and extractive metallurgy has been left mainly with the Dominion Government, the provinces of British Columbia, Ontario, Quebec and Nova Scotia have separately established less pretentious laboratories that have been of noticeable assistance to the mineral industries in the respective provinces. The other provinces, where mining is on a smaller scale, have no special laboratory facilities for such work, except in some respects through provincial assistance to university laboratories.

In British Columbia, the Metals and Minerals Division of the British Columbia Industrial and Scientific Research Council is carrying on the work of the British Columbia War Metals Research Board which ceased to function at the close of 1944. Its laboratory is housed in the Mining Building of the University of British Columbia and will be available to render useful service within the Province to the mineral industry.

In Ontario, the Ontario Research Foundation in Toronto does a very limited amount of ore dressing work, but does considerable work on other metallurgical problems. The Foundation is almost self-sustaining by means of service charges from industry. The Ontario Department of Mines provides an assay and mineral identification service to prospectors free of charge or at nominal cost.

The Province of Quebec provides a service through its Department of Mines to prospectors by maintaining well-equipped chemical, assay, spectrographic, and mineralogical laboratories. The Province has supplied certain universities with ore dressing and metallurgical equipment. For instance, the Laval University Laboratories have been equipped with modern testing facilities.

In Nova Scotia, the Provincial Government has provided the Nova Scotia Technical College with small-scale equipment for test work in ore dressing.

The Bureau of Mines in Ottawa co-operates fully with all the provinces by supplying any information desired and by supplying the provincial departments concerned copies of all reports on investigations on ores originating in the respective provinces.

CHAPTER THREE

THE SILVER MINING INDUSTRY IN CANADA

(a) THE SILVER-COBALT MINING INDUSTRY; (b) THE SILVER-LEAD-ZINC MINING INDUSTRY

Definition of the Industry.—Silver mining in Canada is not a distinct mining industry inasmuch as silver-bearing minerals usually occur in association with other metals of economic value—with lead and zinc; with copper, nickel and arsenic; with lode and placer free gold; in copper-gold and nickel-copper ores, and at Great Bear Lake, North West Territory, with pitchblende. Silver-lead-zinc mining is a very important industry in British Columbia and, to a lesser extent, in the Yukon Territory. In Eastern Canada, lead and zinc ores have been mined in Ontario, Quebec and Nova Scotia.

It is to be noted that, in addition to its recovery from silver-lead ores, zinc is now produced in large quantities from copper-gold-silver ores mined in Quebec, Manitoba and Saskatchewan.

General statistical data contained in this chapter are essentially those pertaining only to the mining of silver-cobalt and silver-lead-zinc ores but the output figures for specific metals represent the total production from all sources.

(a) THE SILVER-COBALT MINING INDUSTRY

The mining of silver-cobalt ores in Canada is confined almost entirely to the district of Temiskaming in northern Ontario. Veins containing these metals were discovered at or near the present town of Cobalt in 1903 and shipments of ores from this area have been continuous since 1904. Depletion and exhaustion of ore reserves during recent years have resulted in a relatively great decline in the production of metals from these deposits. In most instances, operations at properties, some of which were prominent as producers in the past, are conducted by lessees and shipments range from one to several hundred tons. The increased demand for cobalt as an alloying metal has, for some years, stimulated operations of a salvage nature at several of the older mines.

In order to encourage the production of cobalt for war requirements, United States and Canadian government agencies co-operated during a considerable period of the war in the purchase of Canadian cobalt ores. Ores thus acquired were consigned in 1942 and 1943 to a United States Government agency stock pile located at Deloro, Ontario. These government purchases were discontinued early in 1944.

The number of operators reported as actively engaged in the mining or shipping of silver-cobalt ores in 1946 totalled 11, employees numbered 247, and payments for salaries and wages amounted to \$404,012. The gross value of mine and mill shipments was \$325,846. There was no addition to or withdrawal from the stock pile accumulated during the war for the Metals Reserve Company and located at Deloro, Ontario.

Table 78.—Principal Statistics of the Silver-Cobalt Mining Industry in Canada, 1930-1946

Year	Number of active operators (a)	Number of operating mines (c)	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Net value of bullion, ore, concentrates or residues sold
			\$		\$	\$	\$
1930.....	23	28	12,268,322	1,043	1,458,591	352,844	(b) 3,637,181
1935.....	27	28	6,380,731	402	494,791	114,439	1,070,716
1936.....	24	25	5,948,702	363	458,546	104,372	915,376
1937.....	23	25	2,655,060	300	394,336	90,134	540,762
1938.....	34	30	2,696,217	297	386,851	73,549	288,293
1939.....	36	43	2,461,556	323	412,728	10,900	809,263
1940.....	48	44	337,080	123	158,024	63,486	653,032
1941.....	24	14	439,877	182	229,984	40,875	809,263
1942.....	13	14	358,691	192	283,980	68,349	(d) 600,207
1943.....	20	21	587,039	221	290,654	74,691	(d) 578,861
1944.....	10	11	(e)	165	260,575	48,323	(d) 323,260
1945.....	7	8	(e)	166	247,203	49,553	82,508
1946.....	11	11	(e)	247	404,012	58,712	207,483

(a) Includes lessees shipping from dumps.

(b) Gross value.

(c) Includes properties on which operations were of a salvage nature only.

(d) Includes value of ores consigned to the United States Government stock pile at Deloro, Ontario.

(e) Not recorded.

NOTE.—The cost of process supplies used—explosives, etc.—was recorded for the first time in 1935 and, beginning with 1935, this cost together with the cost of fuel and purchased electricity, freight and smelter charges were deducted from the gross value of sales.

Table 79.—Summary (b) of Operations of Silver-Cobalt Mines and Mills in Canada, 1944-1946

	1944	1945	1946
Number of mines in operation (*).....	11	11	11
Ore mined.....	27,184	30,519	32,841
Ore salvaged from surface (c).....	2,189	4,521	291
Ore treated (milled) (a).....	30,190	30,319	29,635
Concentrates produced.....	862	1,047	678
Gross value of bullion, ore, concentrates and residues sold.....	(d) 422,860	152,475	325,846
Cost of freight.....	3,138	1,704	750
Smelter charges.....	12,330	8,231	9,990
Cost of fuel and purchased electricity used.....	48,323	49,553	58,712
Cost of process supplies used.....	35,809	10,479	48,932
Net value of sales.....	323,260	82,508	207,433

(*) All mines located in northern Ontario and includes properties on which the operations consisted only in salvaging of ore from dumps, etc.

(a) Does not include crude ore shipped.

(b) Partly estimated as data unobtainable from some small shippers.

(c) Complete data not available.

(d) Includes value of ore consigned to the United States Government stock pile at Deloro, Ontario.

Table 80.—Mine and Mill Shipments of Canadian Silver-Cobalt Ores and Concentrates, 1945 and 1946

	Gross Weight	Metal Content			
		Silver	Cobalt	Nickel	Copper
1945	tons	oz.	lb.	lb.	lb.
To Canadian smelters and to Government stock pile at Deloro, Ontario.....	245	223,784	30,383	19,260	6,299
To foreign plants.....	430	109,123	56,138	.....	.....
Total.....	675	223,784	139,506	75,368	6,299
1946					
To Canadian smelters and to Government stock pile at Deloro, Ontario.....	130	288,877	.....	.....	1,793
To foreign plants.....	342	32,884	74,286	30,601	.....
Total.....	472	321,761	74,286	30,601	1,796

Table 81.—Employees, Salaries and Wages in the Silver-Cobalt Mining Industry, 1939-1946

Year	On salaries		On wages		Total employees	Salaries	Wages	Total salaries and wages
	Male	Female	Male	Female				
	Number	Number	Number	Number	Number	\$	\$	\$
1939.....	41	4	278	.....	323	75,730	336,998	412,728
1940.....	17	1	105	.....	123	40,970	117,054	158,024
1941.....	22	3	157	.....	182	60,914	169,070	229,984
1942.....	24	3	165	.....	192	63,722	220,258	283,980
1943.....	34	6	180	1	221	56,570	234,084	290,654
1944.....	20	4	140	1	165	43,960	216,615	260,575
1945.....	14	5	146	1	166	42,267	204,936	247,203
1946.....	20	3	223	1	247	59,085	344,927	404,012

Table 82.—Number of Workmen on Payroll or Time Record at End of Month in the Silver-Cobalt Mining Industry, 1945-1946

Month	1945					1946					
	Mine			Mill	Total	Mine			Mill		Total
	Surface		Under-ground			Surface		Under-ground	Male	Female	
	Male	Female		Male		Male	Female					Male
January.....	36	1	107	26		170	56	82	14		2	154
February.....	31	1	88	23	143	52	.....	87	14	2	155
March.....	31	1	90	19	141	68	.....	95	14	2	179
April.....	29	1	82	22	134	85	.....	95	18	2	200
May.....	35	1	84	14	134	101	.....	95	29	1	226
June.....	49	1	71	11	132	99	.....	96	33	2	229
July.....	51	1	77	11	140	107	.....	115	35	1	259
August.....	63	1	72	11	147	121	.....	109	35	1	266
September.....	65	1	71	11	148	127	.....	115	41	1	284
October.....	77	1	63	12	153	131	.....	108	39	1	279
November.....	71	1	78	12	162	136	.....	90	36	1	263
December.....	60	1	79	13	153	124	.....	67	20	1	212
Average.....	50	1	81	15	147	112	.....	84	27	1	224

COBALT

Output of Canadian cobalt comes entirely from cobalt-bearing deposits located in northern Ontario and usually includes the cobalt recovered and sold in the Metallic state, the cobalt content of oxides and salts sold and the metal content of cobaltiferous ores exported. No cobalt metal, oxides or salts have been produced in Canada from Canadian ores since 1942 and the 73,900 pounds valued at \$70,215 credited as Canadian cobalt production during the year under review, represents the metal content of Canadian ores exported. Included in these exports is the cobalt content of ores and concentrates reshipped from the stock pile of the Metals Reserve Company, located at Deloro, Ontario. Ores placed on this stock pile are not credited as commercial production until reshipped from Deloro.

Deloro Smelting and Refining Company, Limited, has the only plant in Canada that treats ores for the recovery of cobalt. The plant is located at Deloro, Ontario, and produces cobalt metal, oxides, and salts, chiefly for the British market. For the past three years the company has been treating cobalt residues from Africa and has processed little or no Canadian ores. The Canadian production of cobalt ore from 1942 to 1944 was largely purchased by Deloro Smelting and Refining Company as agent for the Department of Munitions and Supply, acting for Metals Reserve Company of the United States, and was stockpiled for this account. The purchase of these ores for the Metals Reserve Company was discontinued February 22, 1944.

The Bureau of Mines, Ottawa, reported recently that about 75 per cent of the world production of cobalt is used in the metallurgical industry and most of the remainder in the ceramic industry. The metallurgical uses are for high-speed cutting steels; for making stellite or stellite-type alloys, which contain 45 to 50 per cent cobalt, 30 to 37 per cent chromium, and 12 to 17 per cent tungsten. There are various modifications of this composition, but all contain high percentages of cobalt. Stellite is used for cutting metals at high speed and for making permanent magnets, also in the manufacture of valves for aeroplane engines. Small quantities of cobalt used with other chemicals in nickel-plating solutions are said to produce a bright nickel electro deposit as an undercoating for later chromium plating. A certain amount of cobalt is used in electro-plating and as a catalyst. Cobalt oxide is used mainly in the ceramic industry owing to its fine colouring properties. Other compounds of cobalt are used as driers in paints and varnishes.

Since 1904, the first year for which cobalt production was recorded in Canada, the output from Canadian ores, to the end of 1946, totalled 34,600,409 pounds of cobalt in all forms, valued at \$33,887,158.

Table 83.—Production of Cobalt from Canadian Ores, 1932-1946

Year	Pounds	Year	Pounds
1932.....	490,631	1940.....	794,359
1933.....	466,702	1941.....	263,257
1934.....	594,671	1942.....	(*) 83,871
1935.....	681,419	1943.....	(*) 175,961
1936.....	887,591	1944.....	(*) 36,283
1937.....	507,064	1945.....	109,123
1938.....	459,226	1946.....	73,900
1939.....	732,561		

(*) Exclusive of cobalt in ores placed on the United States Government stock pile at Deloro, Ontario, but includes metal in ores reshipped from this stock pile.

Table 84.—Production of Cobalt from Canadian Ores, Imports and Exports, 1945 and 1946

	1945		1946	
	Quantity	\$	Quantity	\$
	pounds		pounds	
PRODUCTION— (In terms of metallic cobalt and cobalt in oxides and salts sold and in ores exported).....	109,123	90,026	73,900	70,215
IMPORTS—				
Cobalt ore.....	2,390,000	869,415	1,170,000	451,115
Oxide of cobalt.....	16,072	22,390	16,250	21,550
EXPORTS—				
Cobalt, contained in ore.....	65,000	57,119	48,100	41,091
Cobalt, metallic.....	583,334	954,257	510,526	854,282
Cobalt, alloys.....	321,047	1,247,249	111,651	345,012
Cobalt oxides and cobalt salts.....	555,522	975,035	456,088	608,767

Table 85.—World Production of Cobalt, 1939-1945 (from the Annual Report of the American Bureau of Metal Statistics)

Country	1939	1940	1941	1942	1943	1944	1945
	pounds	pounds	pounds	pounds	pounds	pounds	pounds
Canada (a).....	732,561	794,359	263,257	83,871	175,961	36,283	109,123
Burma (b).....	504,000	480,000	160,000	Not available			
Northern Rhodesia (c).....	3,487,456	Not available					
Belgian Congo (c).....	2,070,000	5,326,000	5,040,000	3,648,000	4,544,000	4,138,000	7,500,000
French Morocco.....	1,610,000	804,000	174,000	6,600	606,000	626,000	650,000

(a) Metal recovered from smelter products plus cobalt contained in cobalt residues exported.

(b) Estimated cobalt content of nickel speiss.

(c) Cobalt content of alloys.

NOTE.—Production in Northern Rhodesia has probably continued at 1939 rate.

ARSENIC

Production of Arsenic (As_2O_3) from Canadian ores during 1946 was 745,885 pounds valued at \$38,264, compared with 2,045,730 pounds worth \$130,909 in 1945. The major portion of the production had its origin in Quebec where the O'Brien Gold Mines Ltd., recovers crude arsenic which is shipped to the Deloro smelter for refining. Due to a mud slide in the Beattie mines, production of arsenic there was temporarily suspended. The production from Ontario ores originated in the silver-cobalt ores treated at the Deloro plant. The auriferous quartz ores exported to the United States from British Columbia mines contain considerable amounts of arsenic but no data are available on the possible recovery of this arsenic and since the Canadian gold mines receive no payment for the arsenic content, it is not credited as commercial production.

Table 86.—Production in Canada, Imports and Exports of Arsenic, 1945 and 1946

	1945		1946	
	Quantity	Value	Quantity	Value
	pounds	\$	pounds	\$
PRODUCTION—				
White arsenic.....	2,045,730	130,909	745,885	38,264
IMPORTS—				
Arsenic.....	5,013,269	185,133	3,867,606	149,111
White arsenic (arsenious oxide).....	47,250	16,980	500	140
Soda, arseniate of, binarsenate.....	31,398	2,453	82,668	15,920
Arsenate of lime.....			60,056	4,292
Total.....		204,566		169,463
Exports—Arsenic (*) Total.....	6,070,100	282,718	1,718,300	74,252

(*) Includes arsenic content in gold ores exported from British Columbia.

Table 87.—Production in Canada, Imports and Exports of Arsenic, 1942-1946

Year	Pro- duction (*)	Imports	Exports	
			Refined	Crude
	pounds	pounds	pounds	pounds
1942.....	7,853,123	2,082	2,204,889	5,844,611
1943.....	3,153,538	400	2,358,400	199,358
1944.....	2,627,022	2,405	2,016,000	.....
1945.....	2,045,730	.....	1,519,697	.....
1946.....	745,885	.....	418,000	.....

(*) Crude and refined.

Table 88.—Consumption of Refined Arsenic in Canada, 1943-1946

	1943	1944	1945	1946
	pounds	pounds	pounds	pounds
Glass.....	135,399	193,530	303,246	336,501
Insecticides (*).....	333,178	131,978	340,000	55,808
White metals.....	60,959	60,902	62,000	60,110
Miscellaneous.....	7,662	7,800	8,000	14,800
Total Accounted For.....	537,198	394,210	713,246	467,219

(*) Does not include arsenic acid (As_2O_5) imported for use in making insecticides, as follows:

1943.....	4,594,034 lb.	1945.....	5,667,053 lb.
1944.....	4,565,142 lb.	1946.....	3,867,606 lb.

(b) The Silver-Lead-Zinc Mining Industry

In 1946 the silver-lead-zinc Mining industry in Canada reported 33 operators or firms engaged in the mining, exploration or development of silver-lead-zinc deposits. Employees numbered 2,451 and salaries and wages paid amounted to \$5,987,111. The cost of explosives and other process supplies consumed totalled \$2,636,735 and fuel and electricity used was recorded at \$780,136. The gross value of production, as reported by the entire industry, totalled \$48,342,501. After deducting fuel, electricity, supplies, freight and treatment charges, the net value was \$39,262,606.

Table 89.—Principal Statistics of the Silver-Lead-Zinc Mining Industry in Canada, 1937-1946

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Value of ores and concentrates sold (b)
	(a)	(a)	\$		\$	\$	\$
1937.....	128	130	29,637,739	2,220	3,914,643	845,898	22,740,582
1938.....	107	108	30,386,714	1,640	3,027,915	702,571	18,483,945
1939.....	82	83	23,664,620	1,646	2,803,057	667,661	13,555,609
1940.....	82	83	19,969,198	1,585	3,052,532	468,157	16,439,530
1941.....	63	64	17,717,334	1,666	3,452,199	610,168	20,653,212
1942.....	44	44	19,484,442	2,185	4,730,370	791,772	23,504,642
1943.....	31	32	20,603,191	3,097	6,423,724	986,519	21,932,644
1944.....	20	20	(c)	2,769	5,810,290	860,231	16,802,759
1945.....	19	19	(c)	2,485	5,473,582	816,972	24,858,013
1946—							
Quebec.....	12	10	(c)	597	1,215,867	194,599	3,687,769
British Columbia.....	21	21	(c)	1,854	4,771,244	585,537	41,237,861
Yukon.....			(c)				
Total.....	33	31	(c)	2,451	5,987,111	780,136	44,925,630

(a) Usually includes a number of small shippers from whom no particulars were received relating to wages, etc.

(b) The value of fuel, purchased electricity and process supplies have been deducted.

(c) Data not recorded since 1943.

Table 90.—Ore Mined and Milled in the Silver-Lead-Zinc Mining Industry in Canada, 1945 and 1946

	Yukon and Northwest Territories	British Columbia	Quebec	Canada
1945—Ore mined.....ton	93	2,605,238	481,352	3,086,683
Ore milled.....ton		2,603,703	480,822	3,084,525
Concentrates produced—Lead.....ton	2	231,043	9,037	240,082
Zinc.....ton		304,242	49,895	354,137
Pitchblende-silver.....ton				(*)
Gold precipitate.....ton			13	13
1946—Ore mined.....ton		2,382,412	423,246	2,805,658
Ore milled.....ton		2,379,609	423,786	2,803,395
Concentrates produced—Lead.....ton		233,630	7,708	241,338
Zinc.....ton		278,784	42,081	320,865
Pitchblende-silver.....ton				(*)
Gold precipitate.....ton			16	16

(*) Data not available for publication.

Table 91.—Destination of Shipments from Silver-Lead-Zinc Mines of Canada, 1945 and 1946

	Tons shipped	Gross value at shipping point	Total metal content as determined by settlement assay			
			Gold	Silver	Lead	Zinc
		\$	fine oz.	fine oz.	pounds	pounds
1945						
To Canadian smelters—						
Lead ore.....	1,113	91,797	51	202,394	99,539	1,737
Lead concentrates.....	228,009	13,229,040	4,519,559	316,116,514	22,778,061	
Zinc concentrates (*).....	281,032	8,452,888	585,376	28,848,207	272,777,802	
Dry ore.....	311	15,817	98	29,959	2,178	
Total.....	510,465	21,789,542	149	5,337,288	345,066,438	295,557,600
To Foreign smelters—						
Lead ore.....	221	41,618	4	41,319	188,420	1,958
Lead concentrates.....	12,073	1,051,115	2,602	756,797	12,289,803	87,541
Zinc concentrates (*).....	73,105	3,593,571	80,983	8,987	81,738,255	
Gold precipitate.....	13	625,618	11,690	270,838		
Total.....	85,412	5,311,922	14,296	1,149,937	12,487,210	81,827,754
Grand Total (Gross).....		27,101,464				
Cost of freight.....		1,255,218				
Cost of fuel and purchased electricity.....		816,972				
Smelter charges.....		755,592				
Cost of process supplies.....		1,426,479				
Net Value.....		22,867,203				
1946						
To Canadian smelters—						
Lead ore.....	2,539	354,879	139	427,162	308,346	257,022
Lead concentrates.....	232,242	25,067,780	4,894,027	323,499,207	22,387,002	
Zinc concentrates (*).....	275,623	17,925,145	551,866	26,386,871	267,970,154	
Dry ore.....	29	8,533	9,924			
Total.....	510,433	43,356,337	139	5,882,979	350,194,424	290,614,178
To Foreign smelters—						
Lead concentrates.....	9,096	1,530,761	2,343	719,530	9,624,349	
Zinc concentrates (*).....	45,242	2,867,858	0,428	359,800	50,738,171	
Gold precipitates.....	16	587,645	7,872			
Total.....	54,354	4,986,164	10,215	1,035,758	9,624,349	50,738,171
Grand Total (Gross).....	564,787	48,342,501	10,354	6,968,737	359,818,773	341,352,349
Cost of freight.....		1,561,558				
Cost of fuel and purchased electricity.....		780,136				
Smelter charges.....		4,101,466				
Cost of process supplies.....		2,636,735				
Net Value.....		39,262,606				

(*) Does not include any zinc concentrates produced from copper-gold-zinc ores in Quebec, Manitoba, Saskatchewan or British Columbia.

NOTE.—In addition to the metals contained in shipments listed in Table 91, there are considerable quantities of lead and silver contained in ores shipped from certain gold mines in British Columbia. Cadmium, bismuth, antimony, tin and sulphur are also recovered from these ores (silver-lead-zinc.)

Table 92.—Employees, Salaries and Wages in the Silver-Lead-Zinc Mining Industry, 1939-1946

Year	On salaries		On wages		Total employees	Salaries	Wages	Total salaries and wages
	Male	Female	Male	Female				
	Number	Number	Number	Number	Number	\$	\$	\$
1939.....	242	29	1,375		1,646	466,721	2,336,336	2,803,057
1940.....	224	20	1,341		1,585	519,705	2,532,827	3,052,532
1941.....	217	22	1,427		1,666	526,818	2,925,381	3,452,199
1942.....	281	27	1,877		2,185	711,770	4,018,600	4,730,370
1943.....	359	48	2,646	44	3,097	940,099	5,483,625	6,423,724
1944.....	318	56	2,336	59	2,769	920,827	4,889,463	5,810,290
1945.....	309	57	2,068	51	2,485	935,838	4,537,744	5,473,582
1946.....	336	63	2,030	22	2,451	1,047,121	4,939,990	5,987,111

Table 93.—Number of Workmen, by Months, in the Silver-Lead-Zinc Mining Industry 1945 and 1946

Month	1945 Total	1946					Total
		Mine			Mill		
		Surface		Under-ground			
		Male	Female	Male	Male	Female	
January.....	2,352	390	18	1,118	383		1,999
February.....	2,343	412	18	1,112	386		1,923
March.....	2,294	409	17	1,079	388		1,893
April.....	2,094	420	16	1,117	406		1,959
May.....	2,101	477	16	1,143	426		2,062
June.....	2,067	538	15	1,224	421		2,198
July.....	2,053	514	16	1,164	391	4	2,089
August.....	1,977	556	16	1,102	370		2,644
September.....	1,939	512	16	1,097	367		1,392
October.....	2,066	500	21	1,176	373		2,070
November.....	2,122	528	21	1,292	378		2,219
December.....	2,056	494	20	1,296	381		2,191
Average.....	2,119	480	21	1,160	390	1	2,039

Table 94.—Drilling Completed on Silver-Lead-Zinc Deposits in Canada, 1945 and 1946

	Footage drilled	
	1945	1946
Diamond drilling for exploration and testing—		
By mining companies with their own personnel and equipment.....	4,100	5,149
By diamond drilling contractors.....	53,366	74,288
Other diamond drilling—Blast hole diamond drilling—		
By mining companies with their own personnel and equipment.....		361,434
By diamond drilling contractors.....	272,508	6,537
Drilling by percussion or other machines.....	(*) 1,538,711	468,959

(*) Not complete as records are unobtainable at certain mines.

Table 95.—Taxes Paid in 1945 and 1946 by Silver-Lead-Zinc, Nickel-Copper and Copper-Gold-Silver Mining and Smelting Companies

Tax Paid	1945	1946
	\$	\$
Dominion income tax.....	9,782,110	4,132,689
Dominion excess profits tax.....	14,544,969	7,485,000
Provincial tax.....	2,893,782	850,610
Municipal tax.....	719,178	295,535

SILVER

Production of fine new silver from all types of Canadian ores totalled 12,544,100 troy ounces valued at \$10,493,139 in 1946 compared with 12,942,906 troy ounces worth \$6,083,166 in 1945. The average estimated price of the fine metal in Canadian funds was 83.65 cents per troy ounce in 1946 as against 47 cents in 1945. Of the total Canadian production in 1946 the British Columbia mines contributed 6,078,419 ounces, Ontario 2,485,215 ounces, Quebec, 1,916,453 ounces, Saskatchewan, 1,498,496 ounces, Manitoba, 528,017 ounces and smaller amounts from Yukon, Northwest Territories and Nova Scotia. Production of silver in Canada since 1887, the first year for which data are available, to the end of 1946, totalled 906,403,934 ounces, valued at \$511,142,131.

Table 96.—Production of Silver (in All Forms) from All Ores in Canada for Years Specified, 1887-1946

Year	Ounces	Cents per ounce	Year	Ounces	Cents per ounce
1887.....	355,083	98-00	1932.....	18,347,907	31-67
1891.....	414,523	98-00	1933.....	15,187,950	37-83
1896.....	3,205,343	67-06	1934.....	16,415,282	47-46
1901.....	5,539,192	58-95	1935.....	16,618,558	64-79
1906.....	8,473,379	66-79	1936.....	18,334,487	45-13
1910 (*).....	32,869,264	53-49	1937.....	22,977,751	44-88
1911.....	32,559,044	53-30	1938.....	22,219,195	43-48
1916.....	25,459,741	65-66	1939.....	23,163,629	40-49
1919.....	16,020,657	(†) 111-122	1940.....	23,833,752	38-25
1925.....	13,330,357	100-90	1941.....	21,754,408	38-26
1927.....	20,228,988	69-06	1942.....	20,695,101	42-17
1929.....	22,736,698	56-37	1943.....	17,344,569	45-25
1929.....	23,143,261	52-99	1944.....	13,627,109	43-0
1930.....	26,443,823	38-15	1945.....	12,942,906	47-0
1931.....	20,562,247	29-87	1946.....	12,544,100	83-65

(*) Year of maximum output.

(†) Highest price per ounce recorded since 1887.

Table 97.—Production of Silver (All Forms) in Canada, by Months, 1945 and 1946

Month	1945	1946
	ounces	ounces
January.....	1,032,679	1,172,602
February.....	964,449	1,013,668
March.....	1,214,945	1,028,797
April.....	1,067,862	1,135,744
May.....	1,213,710	1,011,263
June.....	1,113,656	1,142,305
July.....	963,561	1,233,310
August.....	1,069,038	1,155,447
September.....	975,250	829,005
October.....	1,049,562	906,467
November.....	1,110,380	820,218
December.....	1,167,814	995,274
Total.....	12,942,906	12,544,100

Table 98.—Production of Silver Bullion in Canada, 1942-1946 (Fine Ounces)

1942.....	17,390,000	1945.....	10,890,000
1943.....	15,870,000	1946.....	10,774,000
1944.....	12,020,000		

Table 99.—Silver Production in Canada According to Nature of Ores, by Provinces, 1946

Province	Crude placer gold	Auriferous quartz ores	Copper-gold-silver ores	Nickel-copper ores	Silver-lead-zinc ores	Silver-cobalt and other ores	Total
	ounces	ounces	ounces	ounces	ounces	ounces	ounces
Nova Scotia.....		146					146
Quebec.....		95,944	806,597		1,013,912		1,916,453
Ontario.....		850,991		1,205,664		428,560	2,485,215
Manitoba.....		6,621	521,396				528,017
Saskatchewan.....			1,498,496				1,498,496
Alberta.....	12						12
British Columbia.....	2,372	58,402	99,414		(†) 5,918,231		6,078,419
Northwest Territories.....		6,112					6,112
Yukon.....	9,416				21,814		31,230
Canada.....	11,800	1,018,216	2,925,903	1,205,664	6,953,957	428,560	12,544,100

(†) Contains a relatively small quantity recovered from gold ores.

Table 100.—Production of Silver in Canada, by Provinces, and Method of Computation 1945 and 1946

	1945		1946	
	Quantity	Value	Quantity	Value
	ounces	\$	ounces	\$
NOVA SCOTIA—				
In gold bullion.....	112	53	146	122
QUEBEC—				
In anode copper.....	1,149,089	540,072	806,597	674,718
In gold bullion made and in concentrates exported.....	1,000,481	470,226	1,109,856	928,395
Total.....	2,149,570	1,010,298	1,916,453	1,603,113
ONTARIO—				
In silver recovered in Canada from cobalt ores.....	476,335	223,877	383,428	320,737
In gold bullion.....	288,204	135,456	340,300	284,661
In blister copper.....	1,627,984	765,152	1,153,108	964,575
In ores, concentrates, residues, matte, etc., exported.....	792,846	372,638	608,379	508,909
Total.....	3,185,369	1,497,123	2,485,215	2,078,882
MANITOBA—				
In blister copper.....	527,847	248,088	521,396	436,148
In gold bullion (gold mines) and ores exported.....	6,036	2,837	6,621	5,538
Total.....	533,883	250,925	528,017	441,686
SASKATCHEWAN—				
In blister copper.....	1,426,457	670,435	1,498,496	1,253,492
In gold bullion and in crude alluvial gold.....				
Total.....	1,426,457	670,435	1,498,496	1,253,492
ALBERTA—				
In alluvial gold.....	1		12	10
BRITISH COLUMBIA—				
In alluvial gold.....	2,266	1,065	2,372	1,984
In gold bullion.....	18,628	8,755	13,918	11,642
In base bullion and in ores, etc., exported.....	5,599,429	2,631,732	6,062,129	5,070,971
Total.....	5,620,323	2,641,552	6,078,419	5,084,597
YUKON—				
In alluvial gold.....	6,282	2,952	9,416	7,876
In silver-lead ores exported.....	18,876	8,872	21,814	18,748
Total.....	25,158	11,824	31,230	26,124
NORTHWEST TERRITORIES—				
In pitchblende-silver ores shipped to smelters (*) and in gold bullion.....	2,033	956	6,112	5,113
Canada—Total.....	12,942,906	6,083,166	12,544,100	10,493,139

(*) Complete data relating to recovery of silver from pitchblende ores are not available since 1942.

NOTE.—For 1946 silver was valued at 83.6 cents per fine ounce, the average price of domestic sales and sales on the New York market adjusted and expressed in Canadian funds; for 1945, the corresponding price was 47 cents.

Table 101.—Source of Silver Production in Canada by Percentages, 1942-1946

Source	1942	1943	1944	1945	1946
In silver-cobalt ores.....	4.13	0.81	5.05	3.68	3.05
In base bullion (a).....	46.16	45.58	35.52	39.51	46.72
In gold ores (bullion and placer).....	3.71	3.07	3.21	3.38	3.79
In blister and anode copper (b).....	34.28	37.28	39.07	36.56	31.72
In matte, copper ores and silver-lead ores, etc., exported (other than silver-cobalt ores).....	11.72	13.26	17.15	16.87	14.72
	100.0	100.0	100.0	100.0	100.0

(a) Chiefly from silver-lead ores.

(b) Made from copper-gold-silver and nickel-copper ores.

Table 102.—Estimated Consumption of Fine Silver in Canada for Industrial Purposes, 1937-1946

	In anodes for plating	In making sterling silver and other silver alloys (except lead-silver alloys)	In making silver nitrate	In lead-silver alloys	Miscella- neous	Total
	ounces	ounces	ounces	ounces	ounces	ounces
1937.....	600,000	450,000	690,000		150,000	1,890,000
1938.....	580,000	660,000	750,000	Not	150,000	2,140,000
1939.....	750,000	470,000	615,000		250,000	2,085,000
1940.....	600,000	600,000	665,000	available	200,000	2,065,000
1941.....	720,000	1,200,000	790,000		250,000	2,960,000
1942.....	800,000	1,600,000	840,000	240,000	250,000	3,730,000
1943.....	800,000	1,620,000	890,000	350,000	300,000	3,960,000
1944.....	900,000	2,650,000	890,000	180,000	360,000	4,980,000
1945.....	960,000	3,740,000	1,040,000	130,000	410,000	6,280,000
1946.....	1,310,000	3,490,000	937,000	40,000	404,000	6,181,000

NOTE.—Amounts used for coinage not included in above figures.

Table 103.—Imports into Canada and Exports of Silver and Silver Products, 1945 and 1946

	1945		1946	
	Quantity	Value	Quantity	Value
	ounces	\$	ounces	\$
IMPORTS—				
Silver, unmanufactured.....	1,796	1,407	1,927,922	1,586,092
Silver, manufactures of, n.o.p.....		57,423		484,757
Toilet articles of which the most important component, in value, is sterling silver.....		4,427		23,841
Total.....		63,357		2,094,690
EXPORTS—				
Silver contained in ore, concentrates, etc.....	2,232,405	1,153,196	1,863,817	1,429,083
Silver bullion (Canadian).....	2,723,698	1,443,814	2,316,689	2,061,338
Silver manufactures.....		284,639		691,812
Total.....		2,881,649		4,182,233

Table 104.—Silver Production of the World (American Bureau of Metal Statistics)—
Fine Troy Ounces

	1940	1945	1946
NORTH AMERICA—			
United States (including Philippine Islands).....	67,013,000	29,332,000	21,677,000
Canada.....	23,833,752	12,778,000	12,870,000
Mexico.....	82,638,167	60,000,000	48,297,659
Newfoundland.....	1,494,077	1,076,000	1,107,827
Total North America.....	174,978,996	103,186,000	83,952,486
CENTRAL AMERICA AND WEST INDIES.....	4,600,000	3,600,000	3,600,000
SOUTH AMERICA—			
Argentina.....	2,873,000	2,760,300	3,090,000
Bolivia.....	5,626,250	6,687,200	6,400,000
Chile.....	1,506,314	825,419	532,722
Colombia.....	260,310	168,699	146,000
Ecuador.....	105,000	314,000	270,000
Peru.....	19,366,251	15,000,000	14,467,500
Other South America.....	50,000	50,000	50,000
Total South America.....	29,787,425	25,805,318	24,956,222
EUROPE—			
Czechoslovakia.....	870,000	(*)	(*)
France.....	393,870	(*)	(*)
Great Britain.....	81,496	26,808	25,000
Norway.....	302,210	131,815	215,400
Romania.....	500,204	189,689	(*)
Spain.....	1,050,341	497,800	600,000
Sweden.....	1,115,316	1,135,152	1,000,000
Australia.....	15,412,581	8,076,740	7,000,000
New Guinea.....	199,084		
New Zealand.....	415,330	244,544	250,000
ASIA—			
India and Burma.....	6,080,000	(*)	(*)
Netherlands Indies.....	1,499,544	(*)	(*)
Turkey.....	575,000	(*)	(*)
AFRICA—			
Algeria.....	47,614	(*)	(*)
Rhodesia.....	266,216	96,000	95,168
Transvaal, Cape Colony and Natal.....	1,292,284	1,236,190	1,203,978
Belgian Congo.....	2,256,930	2,500,000	2,000,000
French Morocco.....	294,108	(*)	(*)
Southwest Africa.....	381,500		
Tunis.....	41,056	(*)	(*)

(*) Not available.

NOTE.—World totals are not shown, as production from Russia, Siberia, Japan, Korea and some other countries is not known.

LEAD

Output of new lead totalled 353,973,776 pounds in 1946 compared with 346,994,472 pounds in 1945, these figures representing the lead in base bullion produced in Canada plus the lead content in ores exported. The production of new refined lead was 331,488,000 pounds in 1946 and 326,206,000 pounds in 1945.

Lead production in Canada comes from the silver-lead-zinc mines in British Columbia and from the zinc-lead mines in Quebec and Ontario. The Sullivan mine at Kimberley, British Columbia, operated by the Consolidated Mining and Smelting Company of Canada, is the principal source of production. Concentrates from the mine are treated in the Company's smelter at Trail, British Columbia. All concentrates produced in eastern Canada are exported for further treatment.

The Consolidated Mining & Smelting Company of Canada Ltd., Trail, British Columbia, is the only producer of new refined lead.

Table 105.—Production* of New Lead in Canada, 1932-1946

Year	Tons	\$	Average price per pound (Canadian funds) cents
1932.....	127,974	5,409,704	2.114
1933.....	133,238	6,372,998	2.392
1934.....	173,138	8,436,658	2.436
1935.....	169,553	10,624,772	3.133
1936.....	191,590	14,993,869	3.913
1937.....	206,000	21,053,173	5.110
1938.....	209,464	14,008,941	3.344
1940.....	194,285	12,313,768	3.169
1941.....	235,925	15,863,605	3.362
1942.....	230,084	15,470,815	3.362
1943.....	256,071	17,218,233	3.362
1944.....	222,030	16,670,041	3.754
1945.....	152,291	13,706,199	4.500
1946.....	173,497	17,349,723	5.00
	176,987	23,893,230	6.75

(*) Primary lead in base bullion produced plus lead in ores exported.

Table 106.—Production of Lead in Canada, by Months, 1946 and 1947

Month	Lead (All Forms)		Refined Lead	
	1946	1947(*)	1946	1947(*)
	tons	tons	tons	tons
January.....	16,860	12,576	15,827	13,385
February.....	15,090	12,636	13,447	13,252
March.....	15,491	14,425	15,139	14,857
April.....	15,282	12,925	14,708	14,014
May.....	14,879	12,836	15,362	14,837
June.....	15,313	14,348	14,627	14,470
July.....	15,676	14,052	12,820	12,470
August.....	14,901	13,612	13,126	9,140
September.....	14,380	13,261	12,490	13,899
October.....	14,728	12,787	12,700	14,139
November.....	11,229	14,651	12,416	13,726
December.....	13,149	10,943	13,082	13,806
Total.....	176,987	159,052	165,744	162,000

(*) Subject to revision.

Table 107.—Production of New Refined Lead in Canada, 1932-1946

Year	Tons	Year	Tons
1932.....	126,568	1940.....	220,088
1933.....	127,283	1941.....	228,027
1934.....	157,229	1942.....	243,306
1935.....	163,758	1943.....	223,871
1936.....	181,725	1944.....	242,581
1937.....	199,697	1945.....	163,103
1938.....	200,382	1946.....	165,744
1939.....	190,569		

Table 108.—Production in Canada, Imports and Exports of Lead, 1945 and 1946

	1945		1946	
	Pounds	Value	Pounds	Value
		\$		\$
PRODUCTION—				
Quebec.....	9,229,726	461,486	7,359,708	496,780
Ontario.....	668,762	33,438	699,244	47,199
British Columbia.....	336,976,468	16,848,823	345,862,680	23,345,731
Yukon.....	119,516	5,976	52,144	3,520
Total.....	346,994,472	17,349,723	353,973,776	23,893,230
IMPORTS—				
Pig and block.....	17,117	3,325	12,580	2,349
Old and scrap.....	36,871	1,045	66,835	1,593
Bars and sheets.....	29,586	3,927	16,057	2,279
Litharge for storage batteries.....	3,526,100	315,553	2,357,100	239,617
Acetate of lead.....	134,521	14,428	120,280	15,200
Nitrate of lead.....	146,362	15,244	277,907	34,818
Other manufactures.....		326,102		138,592
Shots and bullets.....	1,393	298	4,225	734
Lead tetraethyl, compounds of.....	12,030,857	4,056,553	12,671,641	4,075,721
Lead capsules for bottles.....		126		457
Lead pigments—				
Dry white lead.....	128,080	11,757	97,065	10,745
White lead, ground in oil.....	2,112	150	850	132
Dry red lead and orange mineral.....	64,289	7,497	69,977	8,946
Total.....		4,756,005		4,531,183
EXPORTS—				
Lead, contained in ore.....	15,668,200	573,690	12,013,700	736,933
Pig lead.....	214,583,600	8,603,049	208,218,100	15,977,709
White lead.....	785,800	82,215	819,800	93,718
Lead, manufactures.....				130,877
Total.....		9,258,954		16,939,237

Table 109.—Production, Imports, Exports and Domestic Consumption of Refined Ledar 1937-1946

Year	Production in Canada	Domestic consumption	Exports	Imports	Stocks (*) at end of period
	(Tons of 2,000 pounds)				
1937.....	199,697	24,976	176,570	33	Not available
1938.....	200,381	25,791	154,932	28	
1939.....	190,568	27,095	180,736	6	
1940.....	220,087	37,621	151,546	121	62,653
1941.....	228,027	58,403	184,289	148	42,371
1942.....	243,306	58,203	210,782	9	32,975
1943.....	223,871	53,090	154,473	10	34,131
1944.....	142,581	51,671	102,879	10	26,325
1945.....	162,537	62,263	107,291	8	19,900
1946.....	176,987	62,784	102,000	6	21,280

(*) Producers' and consumers'.

Table 110.—Consumption of Refined Lead in Canada by Principal End Uses, 1945 and 1946

Uses	1945	1946
	tons	tons
Solders and alloys.....	14,611	18,329
White lead, red lead and litharge.....	10,821	11,965
Storage batteries.....	18,275	17,472
Foil and collapsible tubes.....	3,324	1,708
Ammunition.....	2,634	686
Iron and steel.....	1,292	1,137
Cable covering.....	5,994	9,267
Miscellaneous.....	5,312	2,220
Total.....	62,263	62,784

Table 111.—Lead Production of the World on Mine Basis, 1940, 1945 and 1946 (From the Annual Report of the American Bureau of Metal Statistics)

	1940	1945	1946
	(Tons of 2,000 pounds)		
United States.....	457,392	390,831	332,478
Canada.....	235,925	173,497	178,726
Newfoundland.....	26,235	27,900	27,793
Mexico.....	216,330	225,875	186,592
Total North America.....	935,882	818,103	725,589
Argentina.....	32,738	20,200	20,000
Bolivia.....	12,855	10,481	9,300
Peru.....	55,599	59,154	46,000
Total South America.....	101,192	89,835	75,300
Czechoslovakia.....	3,400	(a)	(a)
France.....	2,695	8,297	12,883
Germany.....	101,266	(a)	(a)
Great Britain.....	14,771	3,209	2,912
Greece.....			520
Italy.....	48,900	2,778	14,964
Poland.....	(c)	6,600	9,868
Romania.....	(a)	(a)	1,400
Spain.....	30,000	28,853	42,380
Sweden.....	11,049	22,153	(d)
Yugoslavia.....	75,838	(a)	(a)
Burma.....	88,967		
China, including Hong Kong.....	5,512	(b)	(b)
Turkey.....	900		
Australia.....	314,491	180,179	185,500
Algeria.....	2,600	1,058	950
French Morocco.....	25,519	11,800	9,700
French Equatorial Africa.....		3,200	(a)
Tunis.....	13,536	11,000	9,400
Rhodesia.....	321	1,926	9,226

(a) Unknown.

(b) Unknown, but probably small.

(c) Included with Germany.

(d) Unknown; smelters' production was 14,430 tons in 1945 and 9,500 tons in 1946, probably accounting for the major part of the domestic mine production.

NOTE.—Omitted are Russia, Japan, Manchuria and Korea.

ZINC

Production of primary zinc in all forms totalled 470,620,360 pounds in 1946, a decline of 9 per cent from the 1945 total of 517,213,604 pounds. Over 50 per cent of the output in 1946 came from the Sullivan mine of the Consolidated Mining and Smelting Company of Canada Limited, near Kimberley, British Columbia. Several mines in British Columbia exported zinc in concentrates and many shipped the ores to the Trail smelter. The zinc recovered at the

Hudson Bay Mining and Smelting Company's refinery originated in the copper-gold-silver ores at Flin Flon and Sherritt-Gordon. Zinc concentrates from the mines of Ontario and Quebec were exported. Producers in Quebec include, Waite Amulet and Normetal which have copper-gold-silver ores, also Golden-Manitou and New Calumet whose ores are classified as lead-zinc.

Output of new refined zinc totalled 185,683 tons in 1946 as compared with 183,317 tons in 1945.

Table 112.—Production (b) of Zinc from all Types of Canadian Ores, 1932-1946

Year	Tons	\$	Average price per pound (Canadian funds)
			cents
1932.....	86,142	4,144,454	2.41
1933.....	99,566	6,393,132	3.21
1934.....	149,290	9,087,571	3.04
1935.....	160,325	9,936,908	3.10
1936.....	166,591	11,045,007	3.31
1937.....	185,169	18,153,949	4.90
1938.....	190,753	11,723,698	3.07
1939.....	197,267	12,108,244	3.07
1940.....	212,014	14,463,624	3.411
1941.....	156,191	17,477,337	3.411
1942.....	290,129	19,792,579	3.411
1943 (a).....	305,377	24,430,174	4.00
1944.....	225,412	23,685,405	4.30
1945.....	258,607	33,308,556	6.44
1946.....	235,310	36,755,450	7.81

(a) Year of maximum Canadian zinc production.

(b) Comprises refined zinc made in Canada plus zinc in ores, etc., exported.

The total value of Canadian zinc production since the first recording of Canadian zinc statistics in 1898, and inclusive of 1946 totalled \$350,597,787.

Table 113.—Production of Zinc in Canada, by Months, 1945 and 1946

	Primary Zinc in All Forms		Refined Zinc	
	1945	1946	1945	1946
	tons	tons	tons	tons
January.....	24,674	20,700	16,789	15,068
February.....	22,189	19,733	15,330	14,340
March.....	23,773	21,306	15,841	15,804
April.....	21,624	20,630	14,402	15,935
May.....	22,641	20,288	15,940	16,305
June.....	21,665	19,473	15,202	15,779
July.....	22,527	19,617	15,657	15,965
August.....	20,695	19,424	15,089	15,973
September.....	19,168	19,127	14,720	14,970
October.....	19,368	18,268	14,863	15,002
November.....	20,240	18,357	15,010	15,014
December.....	20,043	18,387	14,474	15,528
Total.....	258,607	235,310	183,317	185,683

Table 114.—Refined New Zinc Produced in Canada, 1937-1946

Year	Average price (*) per pound	Short tons	Year	Average price (*) per pound	Short tons
1937.....	4.90	158,542	1942.....	3.411	215,795
1938.....	3.07	171,932	1943.....	4.00	206,510
1939.....	3.07	175,641	1944.....	4.30	168,518
1940.....	3.411	185,722	1945.....	6.44	183,317
1941.....	3.411	213,608	1946.....	7.81	185,683

(*) In Canadian funds.

Table 115.—Canadian Zinc Production (Recoverable) According to Nature of Ores, by Provinces, 1942-1946

Year and Province	Recovered from copper-gold-silver ores	Recovered from silver-lead-zinc and other ores	Total
	pounds	pounds	pounds
1942—Quebec.....	67,064,536	6,876,275	73,940,811
Ontario.....		4,710,394	4,710,394
Manitoba.....	29,908,179		29,908,179
Saskatchewan.....	84,461,520		84,461,520
British Columbia.....		387,236,469	387,236,469
Total Canada.....	181,434,235	398,823,138	580,257,373
1943—Quebec.....	80,401,837	47,767,973	128,169,810
Ontario.....		3,299,812	3,299,812
Manitoba.....	46,783,873		46,783,873
Saskatchewan.....	96,350,404		96,350,404
British Columbia.....	461,776	335,688,679	336,150,455
Total Canada.....	223,997,890	386,756,464	610,754,354
1944—Quebec.....	78,069,636	59,308,803	137,378,439
Ontario.....		2,429,176	2,429,176
Manitoba.....	45,822,278		45,822,278
Saskatchewan.....	87,130,087		87,130,087
British Columbia.....	1,953,077	276,110,296	278,063,373
Total Canada.....	212,975,078	337,848,275	550,823,353
1945—Quebec.....	64,798,734	47,110,831	111,909,565
Ontario.....		237,799	237,799
Manitoba.....	34,860,754		34,860,754
Saskatchewan.....	75,413,851		75,413,851
British Columbia.....		294,791,635	294,791,635
Total Canada.....	175,073,339	342,140,265	517,213,604
1946—Quebec.....	49,881,428	39,768,701	89,650,129
Ontario.....		42,628	42,628
Manitoba.....	35,580,537		35,580,537
Saskatchewan.....	71,077,110		71,077,110
British Columbia.....		274,269,956	274,269,956
Total Canada.....	156,539,075	314,081,285	470,620,360

Table 116.—Production in Canada, Imports and Exports of Zinc, 1945 and 1946

	1945		1946	
	Pounds	Value	Pounds	Value
		\$		\$
PRODUCTION—				
Quebec.....	111,909,565	7,206,976	89,650,129	7,001,675
Ontario.....	237,799	15,314	42,628	3,329
Manitoba.....	34,860,754	2,245,033	35,580,537	2,778,840
Saskatchewan.....	75,413,851	4,856,652	71,077,110	5,551,122
British Columbia.....	294,791,635	18,984,581	274,269,956	21,420,484
Total.....	517,213,604	33,308,556	470,620,360	36,755,450
IMPORTS—				
Zinc dust.....	45,800	3,872	35,000	3,939
Zinc in blocks, pigs, bars and rods, and zinc plates, n.o.p.....	195,400	30,921	30,000	5,512
Zinc in sheets and strips, and zinc plates for marine boilers.....	3,749,400	488,983	4,300,600	585,010
Zinc slugs for dry batteries.....				146,272
Zinc white (zinc oxide).....	2,336,587	180,261	1,850,764	150,928
Zinc sulphate.....	825,141	49,854	685,810	26,713
Zinc chloride.....	270,925	16,532	543,183	29,761
Zinc, manufactures of, n.o.p.....		466,842		1,043,212
Lithopone.....	20,334,132	1,017,275	17,716,626	878,781
Total.....		2,254,540		2,870,128
EXPORTS—				
Zinc, manufactures of.....		132,405		109,721
Zinc, contained in ore.....	183,559,700	5,540,384	116,400,500	3,181,120
Zinc, scrap, dross and ashes.....	13,771,900	577,679	7,495,200	303,626
Zinc, spelter.....	243,920,400	14,122,706	289,792,900	24,174,704
Total.....		20,373,174		27,769,171

Table 117.—Consumption of Refined Zinc in Canada, by Industries, 1942-1946

Industry	1942	1943	1944	1945	1946
(Tons of 2,000 pounds)					
In brass foundries.....	38,494	42,158	28,189	16,520	16,687
In white metal foundries.....	13,290	8,898	5,229	5,566	5,406
In iron and steel (chiefly galvanizing).....	22,762	16,336	19,400	19,000	16,310
In chemicals (zinc oxide, etc.).....	8,022	10,344	10,960	12,006	13,566
In electrical apparatus.....	1,906	1,614	1,747	1,571	2,670
In non-ferrous smelters.....	181	194	206	200	160
In ammunition.....	181	917	1,478	600	.....
In miscellaneous industries.....	55	133	150	200	170
Total.....	84,891	80,599	67,359	55,663	54,959

Table 118.—Production in Canada, Imports, Exports and Domestic Consumption of Refined Zinc, 1937-1946

Year	Production in Canada	Domestic consumption	Exports	Imports	Stocks (*) at end of period
(Tons of 2,000 pounds)					
1937.....	158,542	23,119	134,189	.....	Not available
1938.....	171,932	18,692	132,212	.....	.....
1939.....	175,641	22,981	155,995	.....	.....
1940.....	185,722	36,913	167,073	1	10,028
1941.....	213,608	56,708	141,086	.....	14,903
1942.....	215,795	84,891	152,159	58	9,080
1943.....	206,510	80,599	129,315	13	26,100
1944.....	168,518	67,359	95,985	4	33,220
1945.....	183,317	55,663	121,969	.....	37,700
1946.....	185,683	54,969	151,885	.....	23,265

(*) Producers' and consumers' stocks.

Table 119.—World's Production of Zinc Spelter (a) 1940, 1945 and 1946 (American Bureau of Metal Statistics)

Country	1940	1945	1946
(Tons of 2,000 pounds)			
United States (b).....	675,275	764,561	729,407
United States (c).....	48,917	49,242	43,900
Mexico.....	36,817	53,901	53,311
Canada.....	185,809	183,589	185,692
Total North America.....	946,818	1,051,293	1,012,310
Belgium.....	41,654	12,000	89,231
Czechoslovakia.....	(d)	(f)	(f)
France.....	45,093	8,889	32,764
Germany (e).....	350,090	.....	18,000
Great Britain.....	66,167	69,483	73,199
Italy.....	43,362	1,669	17,202
Netherlands.....	5,566	.....	2,217
Norway.....	18,992	12,120	34,204
Poland.....	(d)	39,700	63,529
Spain.....	13,583	19,082	19,042
Peru.....	196	1,571	1,446
Australia.....	81,425	93,826	85,474
French Indo-China.....	5,900	.....	.....
Rhodesia.....	14,773	17,067	19,250

(a) The statistics in this table are the summaries of production as made by the metallurgical works in the several countries.

(b) Production from ores, foreign and domestic.

(c) Production from secondary material.

(d) Included with Germany.

(e) Germany includes production of Czechoslovakia and Poland.

(f) Not available.

CHAPTER FOUR

THE NICKEL-COPPER INDUSTRY IN CANADA

Statistics relating to the nickel-copper mining, smelting and refining industry, as shown in this chapter, include those pertaining to the mining of copper-nickel ores, the smelting of these ores in Canada and the production in the Dominion of refined copper, nickel, etc., by the firms constituting this industry.

In addition to production of nickel, copper and the platinum metals, there is an important recovery from these ores of the associated metals—silver, gold, selenium and tellurium; sulphur for the manufacture of sulphuric acid is also salvaged in the gaseous state from waste smelter gases. The total gross value of the various primary products of this industry, considered as a whole, was estimated at \$88,444,103 in 1946 compared with \$112,780,854 in 1945.

Two companies operated both mines and metallurgical plants in the Sudbury area in 1946. The International Nickel Company of Canada, Limited, conducts smelting operations at Copper Cliff and Coniston, Ontario, while the Falconbridge Nickel Mines, Ltd., smelt their ores at the Falconbridge mine located a few miles east of the town of Sudbury. This last-named company treats its matte in a refinery located at Kristiansand, Norway. Matte produced by the Falconbridge Nickel Mines Ltd. was treated during the war in the Canadian plants of the International Nickel Company of Canada, Limited, but shipments to Norway were resumed in July of 1945.

The relatively small amount of nickel oxide sometimes produced at Deloro, Ontario, is recovered from silver-cobalt-nickel-arsenic ores mined in northern Ontario. Smelter matter made by the International Nickel Company of Canada, Limited, is treated in plants located at Clydach, Wales; Huntington, West Virginia; and at Port Colborne and Copper Cliff, Ontario. Converter copper made by the International Nickel Company is electrolytically refined at Copper Cliff, and refined nickel is produced by the company at Port Colborne. In 1946 the International Nickel Company of Canada, Limited, shipped ore from the Garson, Creighton, Levack, Frood, Stobie and Murray mines.

In 1946 the industry, as a whole, provided employment for 10,181 persons and distributed \$22,240,671 in salaries and wages. Fuel and electricity cost \$8,552,300 and process supplies cost \$11,065,124. The industry reported that \$849,596 were spent on prospecting for new mineral deposits in 1946.

Copper recovered from the nickel-copper ores of Ontario totalled 89,711 tons in 1946 compared with 119,725 tons in 1945. Production in 1946 of nickel in all forms from these same ores amounted to 96,062 tons against the previous year's production of 122,537 tons.

In 1946 a considerable tonnage of blister copper produced in Manitoba was treated at the Copper Cliff refinery of the International Nickel Company of Canada, Limited; some scrap copper was also refined at Copper Cliff.

The annual financial report of the International Nickel Company of Canada, Limited, carries the following information:

"This report for 1946 covers our first fiscal year of operations after the end of World War II. Deliveries of nickel were curtailed early in the year by strikes in the major nickel-consuming plants. After these disputes were settled the demand for nickel resumed, with the result that total sales of nickel in all forms closely paralleled those for 1945.

"Mining and smelting operations were about 50 per cent of capacity during the first half-year. Beginning in September they were progressively stepped up and by the year end the rate of production was 75 per cent of the maximum wartime figure.

"Ore mined in 1946 was 7,736,334 short tons and compares with an average annual tonnage of 11,453,154 for the three preceding years. The average annual tonnage of ore mined during the three pre-war years, 1936, 1937 and 1938, was 5,321,634.

"Proven ore reserves at the year-end stood at 217,142,000 short tons containing 6,861,000 tons of nickel-copper, compared with 217,373,000 short tons containing 6,866,000 tons of nickel-copper at the end of 1945, and 212,368,000 short tons at the end of 1938 containing 6,806,000 tons of nickel-copper".

The following quotation is from the annual financial report of the Falconbridge Nickel Mines Ltd.:

"Throughout most of 1946, operations were carried on at a rate of approximately one-half that established as a peak in 1944. On January 9, 1946, production was reduced by one-third from the rate prevailing during the last half of 1945 and was continued at this reduced rate until December 18, 1946, when production was increased to about 75 per cent of the 1944 rate.

"This variation in production rate was determined by conditions at the refinery and in world markets and not by the production capacity of the mine or smelter. However, the reduced production rate afforded an opportunity for accelerated development underground and heretofore postponed experimental work in the surface plants.

"Lower level development in the Falconbridge mine increased the reserves in that area by some 830,000 tons of ore having a grade substantially above mine average. After taking into account stope and development ore hoisted and treated and the usual revision of established reserves, based on information obtained by mining them during the year, there was a net gain in ore reserves of 361,000 tons."

"Smelter production was limited to the output of our smaller blast furnace from January 9th to December 18th with the larger furnace operating alone before and after that period. Both the concentrator and smelter operated over 99 per cent of their possible working time. Total ore treated, 486,516 tons, matte produced, 12,780 tons."

Table 120.—Principal Statistics of the Nickel-Copper Mining, Smelting and Refining Industry in Canada, 1944-1946 (a)

	1944	1945	1946
Number of firms.....	5	4	5
Number of mines.....	9	8	14
Number of smelters.....	3	3	3
Number of copper refineries.....	1	1	2
Number of nickel refineries.....	1	1	1
Number of employees—Administrative.....	1,282	1,254	1,172
Workmen.....	14,175	11,502	9,009
Total.....No.	15,457	12,756	10,181
Salaries and wages—Salaries.....\$	3,661,427	3,603,371	3,671,894
Wages.....\$	25,556,018	22,889,025	18,568,777
Total.....\$	29,217,445	26,492,396	22,240,671
Fuel and purchased electricity used.....\$	12,795,637	11,320,125	8,552,300
Process supplies used.....\$	18,449,774	15,621,975	11,065,124
Estimated gross value of matte exported and Canadian refinery products (b).....\$	121,483,774	112,780,854	88,444,103
Value of production (net).....\$	90,130,255	85,791,717	68,826,679

(a) Does not include data for mines, power plants, etc. operated by subsidiary companies.

(b) Includes value of customs material.

Table 121.—Output from Ontario Nickel-Copper Mines and Smelters, 1944-1946

	1944	1945	1946
	(Tons of 2,000 pounds)		
Ore shipped from mines.....	12,955,208	10,854,735	8,224,751
Ore treated (*).....	12,966,679	10,865,722	8,214,834
Converter copper produced in Ontario from Ontario ores (a).....	133,879	114,246	81,423
Nickel produced in Ontario (b).....	104,677	94,832	66,074
Matte and residues exported (c).....	48,287	41,319	46,239
Nickel content of matte exported.....	32,618	27,706	29,642
Copper content of matte exported (a).....	6,516	5,479	8,283

(*) Represents the tonnage of crude ore smelted together with the tonnage of ore milled.

(a) Copper content, including copper content of Ontario ores purchased, less reverts.

(b) Includes nickel content of salts and oxides produced from nickel-copper ores only.

(c) Less a relatively small tonnage of matte returned to Canada for retreatment.

Table 122.—Total Employees and Salaries and Wages Paid by Nickel-Copper Mines, Smelters and Refineries, 1946

	Administrative and office employees				Workmen			
	Male	Female	Total	Total salaries	Male	Female	Total	Total wages
	Number	Number	Number	\$	Number	Number	Number	\$
Mines.....	380	21	401	1,322,680	4,035	3	4,038	8,844,000
Smelters and refineries.....	648	123	771	2,349,214	4,970	1	4,971	9,724,777
Total.....	1,028	144	1,172	3,671,894	9,005	4	9,009	18,568,777

Table 123.—Wage-Earners, by Sex and Months, Entire Industry, 1944-1946

Month	1944		1945		1946	
	Male	Female	Male	Female	Male	Female
January.....	14,006	770	13,152	715	8,343	.....
February.....	14,048	779	13,032	712	8,388	.....
March.....	13,843	754	12,508	702	8,389	.....
April.....	13,447	740	11,975	689	8,436	.....
May.....	13,171	782	11,865	665	8,703	.....
June.....	13,186	791	11,850	636	8,782	.....
July.....	13,095	814	11,623	598	8,871	.....
August.....	13,012	828	10,395	543	9,007	6
September.....	12,731	835	9,231	364	9,183	3
October.....	12,771	822	9,308	367	9,511	6
November.....	13,319	799	8,270	298	10,055	4
December.....	13,543	788	8,502	1	10,388	4
Average.....	13,353	792	10,977	525	9,005	4

Table 124.—Workmen, by Months, in Nickel-Copper Mines Only, 1946 (*)

Month	Mine			Mill	
	Surface		Under-ground	Male	Female
	Male	Female			
January.....	1,071	.....	2,450	150	.....
February.....	1,133	.....	2,392	158	.....
March.....	1,106	.....	2,378	162	.....
April.....	1,199	.....	2,368	169	.....
May.....	1,232	.....	2,466	178	.....
June.....	1,259	.....	2,463	169	.....
July.....	1,256	6	2,516	172	.....
August.....	1,276	4	2,641	174	.....
September.....	1,270	3	2,705	169	.....
October.....	1,271	4	2,907	175	.....
November.....	1,252	2	3,162	187	.....
December.....	1,282	2	3,312	191	.....
Average.....	1,218	3	2,647	170	.....

(*) Included in Table 123.

Table 125.—Workmen, by Months, in Nickel-Copper Smelters and Refineries Only, 1946 (*)

Month	Male	Female	Month	Male	Female
January.....	4,672	.....	August.....	4,916	.....
February.....	4,705	.....	September.....	5,039	.....
March.....	4,743	.....	October.....	5,158	2
April.....	4,700	.....	November.....	5,454	2
May.....	4,827	.....	December.....	5,003	2
June.....	4,891	.....	Average.....	4,970	1
July.....	4,927	.....		

(*) Included in Table 123.

Table 126.—Specified Taxes Paid by the Nickel-Copper Mining, Smelting and Refining Industry, 1945 and 1946 (*)

	1945	1946
	\$	\$
Dominion income tax, including tax on non-operating revenue.....	4,629,005	3,889,893
Dominion excess profits tax.....	5,725,099	4,813,071
Total provincial taxes.....	763,989	761,789
Total municipal taxes.....	296,412	314,068
Grand Total Taxes Paid.....	11,414,505	9,778,801

(*) Includes data relating only to companies which conducted both mining and smelting operations.

Table 127.—Miscellaneous Expenditures by the Nickel-Copper Mining, Smelting and Refining Industry, 1944-1946 (*)

	1944	1945	1946
	\$	\$	\$
Workmen's compensation.....	377,501	337,219	319,020
Silicosis assessment.....	69,878	71,740	61,708
Unemployment insurance.....	182,478	157,917	127,657
Aggregate cost of all supplies purchased.....	28,378,357	24,639,521	17,557,372
Aggregate cost of plant and equipment purchased.....	4,017,231	2,497,049	2,904,456

(*) Includes data relating only to companies which conducted both mining and smelting operations.

NICKEL

Production figures include nickel in matte exported from the Canadian smelters valued at 18 cents per pound; refined and electrolytic nickel produced in Canada, valued at the average price received for sales of nickel metal from the refinery during the year, and the nickel equivalent in oxides or salts produced, valued in the aggregate at the price obtained from the sales of oxides or salts.

Table 128.—Production of Nickel (*) from Canadian Ores, 1926-1946

Year	Tons	Value	Year	Tons	Value
		\$			\$
1926.....	32,857	14,374,163	1937.....	112,453	59,507,176
1927.....	33,399	15,262,171	1938.....	105,286	53,914,494
1928.....	48,378	22,318,907	1939.....	113,053	50,920,305
1929.....	55,133	27,115,461	1940.....	122,779	59,822,591
1930.....	51,884	24,455,133	1941.....	141,129	68,656,795
1931.....	32,833	15,267,453	1942.....	142,606	69,998,427
1932.....	15,164	7,179,862	1943.....	144,009	71,675,322
1933.....	41,632	20,130,480	1944.....	137,299	69,204,152
1934.....	64,344	32,139,425	1945.....	122,565	61,982,133
1935.....	69,258	35,345,103	1946.....	96,062	45,385,155
1936.....	84,870	43,876,525			

(*) Usually includes a relatively small quantity of nickel recovered annually from silver-cobalt ores; Canadian nickel production comes entirely from Ontario ores with the exception of 1937 when a relatively small tonnage of nickel ore was exported from a property in British Columbia.

Table 129.—Production of New Nickel (*) in Canada, by Months, 1945-1947

Month	1945	1946	1947†
	(Tons of 2,000 pounds)		
January.....	11,834	7,001	9,724
February.....	10,318	6,306	8,572
March.....	11,706	7,940	10,014
April.....	10,784	9,360	10,021
May.....	11,691	7,462	9,885
June.....	11,273	7,693	9,835
July.....	11,895	8,226	9,789
August.....	10,948	7,819	9,918
September.....	8,217	8,084	7,577
October.....	8,585	8,721	11,487
November.....	7,709	8,847	9,871
December.....	7,605	8,604	11,423
Total.....	122,565	96,063	118,116

(*) Refined nickel plus recoverable nickel in matte, etc., exported.

(†) Subject to revision.

Table 130.—Imports into Canada and Exports of Nickel, 1945 and 1946

	1945		1946	
	Quantity	Value	Quantity	Value
	lb.	\$	lb.	\$
Imports—				
Nickel and nickel silver in ingots.....	25,277	7,342	12,000	3,123
Nickel rods for wire (90% nickel).....	12,558	8,978	4,427	3,141
Nickel in bars and rods, strips and sheets.....	1,357,478	697,664	2,478,109	1,276,569
Nickel silver bars, rods and strips.....	49,813	14,397	584,371	183,742
Nickel chromium in bars.....	79,403	72,865	125,284	114,439
Nickel, manufactures of, not plated.....		27,101		99,410
Nickel-plated household hollow-ware.....		661		2,334
Nickel household hollow-ware.....				
Nickel-plated ware, n.o.p.....				
Total Nickel and Its Products.....		652,275		1,844,725
		1,481,283		3,527,483
Exports—				
Total Metal in All Forms.....	216,443,300	54,778,226	223,877,200	55,204,632

Table 131.—Production in Canada, Consumption and Exports of Nickel, 1935-1946

Year	Production in Canada (All forms, including content in oxide and in matte exported	Consumption of refined nickel in Canada	Exports		
			Nickel contained in matte or speiss	Nickel in oxide	Refined nickel
(Tons of 2,000 pounds)					
1935.....	69,258	500	29,233	1,317	40,814
1936.....	84,870	500	30,812	2,661	53,346
1937.....	112,453	900	40,404	2,554	68,427
1938.....	105,286	657	44,324	1,842	52,686
1939.....	113,053	635	47,051	2,425	67,914
1940.....	122,779	1,509	38,484	3,864	82,168
1941.....	141,129	3,464	42,616	7,240	87,739
1942.....	142,606	4,509	41,263	9,224	88,308
1943.....	144,009	3,440	36,415	3,892	95,240
1944.....	137,299	2,350	33,848	1,242	97,509
1945.....	122,565	2,410	28,295	1,758	78,168
1946.....	96,062	1,820	30,625	517	80,797

Table 132.—Nickel Production by Principal Countries, 1942-1946 (From the "Annual Report of The American Bureau of Metal Statistics")

	1942	1943	1944	1945	1946
	(Tons of 2,000 pounds)				
Canada (a).....	142,606	144,009	137,299	122,565	96,062
New Caledonia (b).....	6,982	7,110	7,411	5,400	.....
Norway.....	1,004	636	583	.....	.....
United States (c).....	600	640	990	1,155	352
Cuba (d).....	.....	2,700	5,100	12,000	12,391
Germany.....	705	1,049	.....	.....	.....

(a) Production in all forms from Canadian ores, as reported by the Dominion Bureau of Statistics.

(b) Estimated content of ore and matte exported.

(c) By-product in electrolytic refining of copper.

(d) Nickel content of oxide.

COPPER

The production of 183,968 tons of copper in Canada in 1946 was the lowest annual output since 1934. The principal producers were the nickel-copper mines in Ontario, Noranda, Waite Amulet, and Normetal mines in Quebec, Sherritt Gordon in Manitoba, Hudson Bay mine on the Manitoba-Saskatchewan border, and Britannia and Granby in British Columbia.

Table 133.—Total Production of New Copper in Canada, by Provinces and Method of Computation, 1945 and 1946

	1945		1946	
	Tons	Value \$	Tons	Value \$
By PROVINCES—				
Quebec.....	51,343	12,886,976	34,899	8,934,105
Ontario.....	119,725	29,771,633	89,712	22,502,528
Manitoba.....	20,563	5,161,332	19,251	4,928,134
Saskatchewan.....	32,950	8,270,538	31,356	8,027,258
British Columbia.....	12,876	3,231,782	8,750	2,240,068
Total.....	237,457	59,322,261	183,968	46,632,093
By SOURCES(†)—				
In blister and anode copper produced.....	218,730	54,901,192	166,928	42,733,624
In ores, concentrates and copper matte exported(*).....	13,248	3,325,177	8,758	2,241,946
In nickel-copper matte exported.....	5,479	1,095,892	8,282	1,656,523
Total.....	237,457	59,322,161	183,968	46,632,093

(†) Where computed.

(*) Contains a relatively small quantity of copper contained in gold and silver ores shipped to Canadian smelters.

Table 134.—Production of Primary (*) Copper in Canada, by Months, 1945-1947

Month	1945	1946	1947†
	(Tons of 2,000 pounds)		
January.....	22,049	15,734	14,446
February.....	19,825	13,559	15,129
March.....	22,819	15,950	21,451
April.....	21,340	15,725	19,974
May.....	20,452	15,284	20,680
June.....	22,049	14,992	19,396
July.....	21,060	15,292	19,725
August.....	19,614	14,768	18,035
September.....	17,398	14,225	17,582
October.....	17,477	15,046	22,664
November.....	16,018	17,471	19,043
December.....	17,356	15,922	19,075
Total.....	237,457	183,968	227,209

(*) Blister copper plus recoverable copper in concentrates, matte, etc., exported—From all types of ores.

(†) Subject to revision.

Table 135.—Production of Copper from Ontario Ores Only, 1927-1946

Year	Tons	Value	Year	Tons	Value
		\$			\$
1927.....	22,671	4,946,353	1937.....	161,020	41,716,364
1928.....	33,304	8,770,149	1938.....	154,515	30,405,500
1929.....	44,440	14,622,572	1939.....	164,215	32,637,305
1930.....	63,859	15,187,259	1940.....	173,966	34,742,229
1931.....	56,441	9,096,463	1941.....	166,915	33,192,644
1932.....	38,528	4,407,928	1942.....	154,141	30,625,404
1933.....	72,752	10,118,847	1943.....	138,920	32,232,027
1934.....	102,530	14,822,704	1944.....	142,654	33,845,632
1935.....	126,014	19,295,965	1945.....	119,725	29,771,633
1936.....	143,907	26,898,920	1946.....	89,712	22,502,528

NOTE.—Almost entirely from nickel ores.

Table 136.—Production of Copper in Canada, According to Origin of Ores and by Provinces, 1945 and 1946

Province	From copper-gold- silver ores	From nickel-copper ores	From gold and other ores	Total
1945	pounds	pounds	pounds	pounds
Quebec.....	101,940,882		744,187	102,685,069
Ontario.....		239,450,083	792	239,450,875
Manitoba.....	41,128,155			41,128,155
Saskatchewan.....	65,900,701			65,900,701
British Columbia.....	25,613,355		137,897	25,751,252
Canada.....	234,581,093	239,450,083	882,876	474,914,052
1946				
Quebec.....	68,939,908		857,789	69,797,697
Ontario.....		179,421,176	3,463	179,424,639
Manitoba.....	38,501,047			38,501,047
Saskatchewan.....	62,712,954			62,712,954
British Columbia.....	17,430,549		69,989	17,500,538
Canada.....	187,584,458	179,421,176	931,241	367,936,875

Table 137.—Production (*) of Refined Copper in Canada for Years Specified

Year	Tons	Year	Tons
1915.....		1939.....	231,684
1916(f).....	483	1940.....	261,878
1917.....	3,901	1941.....	278,224
1918.....	3,809	1942.....	268,447
1919.....	3,467	1943.....	251,495
1935.....	173,290	1944.....	256,244
1936.....	191,595	1945.....	228,861
1937.....	215,080	1946.....	167,221
1938.....	227,240		

(*) From all sources.

(f) First electrolytic copper produced commercially in Canada.

Table 138.—Production of Refined Copper in Canada, by Months, 1945-1947

Month	1945	1946	1947*
	tons	tons	tons
January.....	20,707	14,191	13,396
February.....	18,692	13,041	11,562
March.....	20,621	13,242	13,936
April.....	19,339	15,260	16,888
May.....	20,436	14,316	18,871
June.....	21,265	13,125	18,764
July.....	19,591	14,189	19,958
August.....	19,318	13,844	18,110
September.....	18,229	14,393	17,890
October.....	19,734	14,702	18,440
November.....	15,520	14,237	18,101
December.....	15,409	12,681	17,244
Total.....	228,861	167,221	203,160

(*) Subject to revision.

Table 139.—Imports and Exports of Copper, 1945 and 1946

	1945		1946	
	Pounds	\$	Pounds	\$
IMPORTS—				
Copper in blocks, pigs and ingots.....	100	23	200	55
Copper, scrap.....	98,900	8,957	82,600	9,358
Copper in bars or rods for the manufacture of trolley, telegraph and telephone wires, electric wires and electric cables.....	2,526,700	383,611	2,532,500	399,162
Copper bars or rods, n.o.p.....	202,400	43,625	215,100	63,897
Copper in strips, sheets or plates.....	163,100	43,883	1,227,300	345,497
Copper tubing, not manufactured.....	605,163	201,857	1,245,300	435,188
Copper rollers.....	.....	45,320	.....	68,702
Copper wire, n.o.p.....	275,902	110,181	383,947	185,164
Copper wire cloth, woven.....	.....	1,274	.....	14,913
Copper manufactures, n.o.p.....	.....	346,990	.....	615,095
Copper sub-acetate.....	400	124	1,142	336
Copper sulphate (blue vitriol).....	6,518,854	417,808	1,352,750	108,965
Total.....		1,603,653		2,246,332
EXPORTS—				
Copper, fine, contained in ore, matte, regulus, etc.....	38,589,200	2,701,244	35,255,800	2,467,906
Copper, old and scrap.....	2,875,700	231,505	2,462,000	182,823
Copper in ingots, bars, cakes, slabs and billets.....	258,698,600	32,098,264	202,829,400	27,463,366
Copper in rods, strips, sheets, plates and tubing.....	14,561,700	1,956,339	31,836,300	4,940,721
Copper wire and cable, insulated.....	.....	3,067,192	.....	1,147,454
Copper wire, bare.....	.....	740,220	.....	624,708
Copper wire, screen.....	.....	10,912	.....	131,851
Copper manufactures, n.o.p.....	.....	53,948	.....	45,962
Total.....		40,859,624		37,004,791

Table 140.—Production of Primary Copper in Canada, Exports and Imports, 1935-1946

Year	Production in Canada	Exports			Imports
		Copper in ore, matte, etc.	Blister copper	Refined copper	Refined copper
		(Tons of 2,000 pounds)			
1935.....	209,499	19,351	36,678	121,768	19
1936.....	210,514	22,760	.....	155,430	95
1937.....	265,014	36,934	5,442	148,071	8
1938.....	285,625	54,903	15,264	181,764	6
1939.....	304,413	60,750	15,556	165,819	3
1940.....	327,797	52,601	15,874	154,502	6
1941.....	321,658	47,769	11,962	126,424	.....
1942.....	301,831	34,047	6,455	98,617	.....
1943.....	287,595	36,210	4,274	64,333	.....
1944.....	273,535	27,989	.....	135,233	2
1945.....	237,457	19,295	.....	129,349	.....
1946.....	183,968	17,628	.....	101,414	.....

NOTE.—Primary copper represents blister copper produced in Canada plus recoverable copper in ores exported.

Table 141.—Production of Refined Copper in Canada, Consumption, Imports and Exports, 1935-1946

Year	Production in Canada	Domestic consumption	Exports	Imports	Stocks at end of period
(Tons of 2,000 pounds)					
1935.....	173,290	43,000	121,768	19	Not available
1936.....	191,595	52,000	155,430	95	
1937.....	215,080	58,000	148,071	8	
1938.....	227,240	54,000	181,764	6	
1939.....	231,684	57,000	165,819	3	
1940.....	261,878	107,000	154,502	6	(Oct. 31) 15,418
1941.....	278,224	142,000	126,424	.....	17,572
1942.....	268,447	183,000	98,617	.....	21,446
1943.....	251,495	176,000	64,333	.....	27,710
1944.....	256,244	122,000	135,233	2	26,600
1945.....	228,861	90,000	129,349	.....	16,760
1946.....	167,221	80,500	91,600	.....	19,390

Table 142.—World Production of Copper, 1944, 1945 and 1946, by Countries According to Origin of the Ore (From the "Annual Report of The American Bureau of Metal Statistics")

Country	1944	1945	1946
(Tons of 2,000 pounds)			
United States.....	1,006,653	805,174	603,868
Mexico.....	47,589	67,784	64,693
Canada.....	273,535	237,457	185,543
Cuba.....	6,256	9,053	12,340
Newfoundland.....	5,500	5,200	4,900
Bolivia.....	6,800	6,721	7,250
Chile.....	549,517	518,304	398,500
Peru.....	35,703	35,181	26,000
Ecuador.....	4,065	4,216	2,886
Total America.....	1,935,618	1,689,090	1,305,980
Finland.....	17,462	16,510	19,400
Italy.....	23,148	.....	16,500
Germany.....	15,900	5,735	13,500
Norway.....	12,100	9,100	9,500
Spain.....	17,770	16,453	18,000
Sweden.....	6,418	6,720	7,068
India, including Burma.....	12,076	10,800	10,979
Turkey.....	182,413	176,600	153,400
Belgian Congo.....	246,498	215,572	204,922
Rhodesia.....	25,935	27,211	30,000
Other Africa.....	454,846	419,383	393,322
Total Africa.....	454,846	419,383	393,322
Australia.....	31,500	27,500	21,100

METALS OF THE PLATINUM GROUP

(From the Annual Review of the Bureau of Mines, Ottawa)

The platinum metals are by-products from the nickel-copper ore of the Sudbury district, Ontario, and thus production in 1946 was reduced in accord with the lessened demand for nickel at the end of the war. The volume of sales was appreciably lower than in 1945, but the value was higher, resulting from the lifting of price control in April, 1946.

Though no information is available on platinum production in Russia, Canada is apparently still the principal source of supply, followed by Russia and South Africa, and with smaller amounts from Colombia and the United States. The United States is still by far the largest consumer of the platinum metals.

Principal Canadian Sources of Supply

The five mines of The International Nickel Company of Canada, Limited, and the mine of Falconbridge Nickel Mines, Limited, all in the Sudbury district, furnished the ore from which the Canadian output of the platinum metals was produced in 1946. The ores of these mines differ considerably in their content of these precious metals. Ore from certain mines with a low content of these metals is smelted separately to make matte for the production of Monel metal, as this

natural alloy of nickel and copper does not go through the refining process from which the precious metal concentrates are derived, and the minute amounts of precious metals in the ore thus remain in the Monel metal. By far the larger part of the Sudbury ores, however, is converted into crude nickel and copper which is refined in the electrolytic refineries at Port Colborne and Copper Cliff respectively. By this means the platinum metals, along with gold, silver, selenium and tellurium, are recovered as anode residues and are treated in a separate refinery at Acton, near London in Great Britain. In the same refinery is treated a precious metals residue from the plant of International Nickel at Clydach, Wales, which employs the Mond process of refining nickel. The nickel-copper matte from Falconbridge is treated by the Company's own process at Kristiansand in Norway, and the precious metals are recovered similarly from the anode residues. There is no published record of the recovery of the platinum metals in Falconbridge's refinery in Norway. During the three years 1944-46, International Nickel smelted approximately 30 million tons of ore and its sales of platinum metals during this period was about a million ounces. Thus the ore contained about 0.033 ounce of platinum metals to the ton. This minute amount in a ton of ore can be extracted profitably, of course, only because it is concentrated automatically, and without extra cost in the refinery sludges.

There has been no production of platinum during recent years from the placers of the Tulameen River in British Columbia, and the nickel-copper-platinum deposits near Hope have remained undeveloped. Nor have the nickel-copper deposits at Shebandowan Lake, 75 miles west of Port Arthur, Ontario, which contain palladium and platinum, been exploited.

Table 143.—Production of Metals of the Platinum Group from Ontario Copper-Nickel Ores, 1939-1946 (c)

Year	Platinum (a)		Palladium (b)	
	Fine ounces	\$	Fine ounces	\$
1939.....	148,877	5,221,712	135,402	4,199,622
1940.....	108,464	4,239,424	91,522	3,520,746
1941.....	124,257	4,747,860	97,432	3,396,304
1942.....	285,138	10,897,033	222,573	8,279,221
1943.....	219,706	8,458,681	126,004	5,233,068
1944.....	157,523	6,064,635	42,929	1,960,085
1945.....	208,234	8,017,010	458,674	18,671,074
1946.....	121,771	7,672,791	117,566	5,162,801

(a) In addition, a relatively small quantity of alluvial platinum is usually recovered annually in British Columbia; such recovery in 1943 totalled 7 ounces valued at \$270; nil in 1944.

(b) Includes other platinum metals, except platinum, and represents the entire Canadian production.

(c) Prior to 1945 the figures reported were the refined metals recovered and the contents of concentrates sold each year. The figures for 1945 represent the metal content of platinum metals concentrates produced, together with adjustment of previous figures to this basis for the years 1938 through 1944.

Table 144.—Production of Selenium and Tellurium from Nickel-Copper Ores, 1939-1946

Year	Selenium		Tellurium	
	Pounds	Value	Pounds	Value
		\$		\$
1939.....	126,930	224,539	.....	.....
1940.....	136,350	260,429	3,491	5,607
1941.....	142,498	272,171	11,453	18,394
1942.....	76,000	145,920	9,500	15,200
1943.....	82,000	143,500	8,600	15,050
1944.....	65,000	117,000	9,900	17,325
1945.....	168,000	322,560	.....	.....
1946.....	270,606	492,503	14,200	21,868

Table 145.—Production of Gold and Silver from Nickel-Copper Ores, 1939-1946

Year	Gold		Silver	
	Fine ounces	Value	Fine ounces	Value(*)
		\$		\$
1939.....	77,094	2,786,177	2,496,632	1,010,886
1940.....	90,863	3,498,225	2,803,052	1,072,167
1941.....	77,960	3,001,460	2,633,815	1,007,698
1942.....	70,861	2,728,148	2,238,177	943,839
1943.....	55,776	2,147,376	1,648,888	746,122
1944.....	55,286	2,128,472	1,828,978	786,461
1945(f).....	91,369	3,528,102	1,735,143	815,417
1946.....	51,490	1,892,257	1,205,664	1,008,538

(*) Estimated.

(f) Includes 26,589 oz. of gold and 84,614 oz. of silver recovered from platinum metals concentrates in foreign plants in previous years and not previously recorded.

CHAPTER FIVE

MISCELLANEOUS METAL MINING INDUSTRIES IN CANADA

Including General Statistics Relating to the Industries in this Group and Commodity Statistics Showing any Production by Provinces and Prices on:

Aluminum	Manganese
Antimony	Mercury
Beryllium	Molybdenum
Bismuth	Pitchblende
Boron	Selenium
Cadmium	Tantalum-Columbium
Calcium	Tellurium
Cerium	Thallium
Chromium	Tin
Iron and steel	Titanium (ilmenite)
Indium	Tungsten
Magnesium	Vanadium

General Review

The mining of certain metal-bearing ores, other than those commonly classified as gold, silver, copper, nickel, cobalt, lead and zinc, have been grouped, for statistical purposes, as a single industry by the Dominion Bureau of Statistics. Their production in some instances is confined to a relatively few operators and the annual extraction of certain types often fluctuates in an erratic manner according to demand and supply. Included in this report, with the finally-revised statistics relating to the Canadian production of these ores or metals, are notes and statistical data pertaining to various rare or semi-rare metals or metalliferous ores produced in other countries. Metals and metal-bearing ores produced in Canada during 1946 and classified as miscellaneous include antimony, bismuth, cadmium, chromite, iron ore, magnesium, manganese ore, mercury, molybdenite, pitchblende, selenium, tellurium, titanium ore, tin and tungsten concentrates. In addition to particulars relating to these metals or minerals, the bulletin contains notes of a summary nature on aluminum, beryllium, lithium, vanadium and a few of the rarer metals.

It is to be noted that the majority of the metals listed above as Canadian products and including bismuth, cadmium, selenium and tellurium, represent by-products recovered in the refining of lead, zinc or copper and, for this reason, such statistics as relate to their production in Canada are included with those of either the silver-lead-zinc mining industry, the copper-gold-silver mining industry, or the non-ferrous smelting and refining industry.

There were 21 active firms in the miscellaneous metal mining industries in 1946; employees numbered 1,037 to whom \$2,238,442 was paid in salaries and wages; fuel, electricity, supplies, freight and ore treatment cost \$3,479,336. The gross value of production was \$7,187,445 in 1946 compared with \$4,276,130 in 1945.

Table 146.—Principal Statistics(*) of the Miscellaneous Metal Mining Industry in Canada, 1945 and 1946

	1945	1946
Number of firms.....	24	21
Number of plants.....	23	21
Number of employees—Administrative and office.....	178	102
Workmen.....	807	935
Total.....	985	1,037
Salaries and wages—Salaries..... \$	324,594	291,452
Wages.....	1,716,755	2,046,990
Total..... \$	2,041,349	2,338,442
Value of production (gross)..... \$	4,276,130	7,187,445
Cost of fuel and electricity.....	753,184	739,531
Process supplies used.....	356,248	670,648
Smelter charges.....	35,875	.....
Freight.....	1,374,264	2,069,157
Value of production (net)..... \$	1,756,559	3,708,109

(*) Does not include data relating to smelters and refineries or to mining in the Northwest Territories. Data for 1945 and 1946 cover only chromium, iron, molybdenum and titanium.

Table 147.—Average Number of Workmen, by Months, 1945 and 1946

Month	1945					1946				
	Surface		Under-ground	Mill		Surface		Under-ground	Mill	
	Male	Female		Male	Female	Male	Female		Male	Female
January.....	527	19	99	85	1	607	9	139	100	1
February.....	554	20	94	95	1	630	9	152	111	1
March.....	543	20	93	95	1	595	10	142	118	1
April.....	582	22	95	98	19	595	10	141	129	1
May.....	592	21	90	106	22	644	11	132	123	1
June.....	622	21	87	118	22	732	11	143	128	1
July.....	648	25	144	135	23	770	10	130	129	1
August.....	629	22	92	118	18	730	10	142	153	1
September.....	518	22	90	115	18	799	10	139	160	1
October.....	528	22	90	124	9	748	6	72	136	.....
November.....	530	9	96	139	7	689	5	70	121	.....
December.....	515	9	91	125	1	600	5	80	115	.....
Average.....	566	19	97	113	12	675	9	123	127	1

ALUMINUM

Although Canada has no bauxite, the principal ore of aluminum, the Canadian aluminum smelting industry is the second largest in the world, being exceeded only by that of the United States. The principal factor favouring the establishment of the industry in Canada is abundant and low-cost hydro-electric power at points where necessary raw materials can be cheaply and conveniently assembled.

Production is entirely by the Aluminum Company of Canada, Limited, which has an ore treatment plant at Arvida, Quebec, and reduction works at Arvida, Ile Maligne, Shawinigan Falls, La Tuque and Beauharnois, all in the province of Quebec. These reduction plants had a total rated yearly capacity of 550,000 tons of aluminum or over 20 per cent of the estimated productive capacity of the world. In 1946 operations were concentrated at Arvida and Ile Maligne.

Fabricating plants are located at Kingston, Toronto and Etobicoke in Ontario, and at Shawinigan Falls in Quebec. These secondary plants consume only a small part of the primary ingot production, from 80 to 90 per cent being exported to all parts of the world.

The demand for aluminum was good in 1946. Increased facilities for the production of aluminum sheet and foil were installed. In pre-war years, Germany controlled the greater part of the trade in foil and Canada is now taking a large part of that market.

The principal imported raw materials used in the Canadian aluminum industry are bauxite from British Guinea, coal and coke from the United States, fluorspar from Newfoundland, and cryolite from Greenland and the United States.

No bauxite occurs in Canada, but clay, shale, nepheline syenite, and anorthosite, containing from 20 to 30 percent alumina, are found in many parts of the country. The utilization of these low-grade materials has been the object of much research and various processes have been developed. The economic success of any of these processes will depend in large part upon local conditions, but it has yet to be proved that any of them can compete on an even basis with the Bayer process, the standard method for producing alumina, and which utilizes bauxite containing less than 7 per cent silica and from 55 to 60 per cent alumina.

Aluminum metal being only one-third as heavy as steel, untarnishable, and also a good conductor of electricity, is finding an increasingly wide field of usefulness. It is available from fabricating plants in many forms as sheets, foil, castings, forgings, rolled and extruded shapes, tubes, rods, wire, powder and paste. Because of its light weight and strength when alloyed, it is widely used in the making of aircraft and for many other purposes where lightness of structural metal is particularly desirable. Large tonnages are used for making cable for transmission of electricity, and for cooking utensils and containers for food and beverages. It is finding increasing use in architecture and in construction of transportation equipment such as railway cars, automobiles, and boats.

The price of aluminum ingot throughout 1945 was 15 cents per pound f.o.b. plant, but early in 1946 the price was reduced to 13½ cents per pound.

Table 148.—Production in Canada, Domestic Consumption, Imports and Exports of Aluminum Ingots, 1937-1946

Year	Production	Domestic Consumption	Exports	Imports
	(Tons of 2,000 pounds)			
1937.....	46,906	10,903	48,500	40
1938.....	71,203	9,396	64,724	69
1939.....	82,840	10,544	70,578	189
1940.....	109,144	18,197	86,536	133
1941.....	213,873	19,717	192,757	3
1942.....	340,596	32,700	314,483	.....
1943.....	495,749	40,100	375,383	1
1944.....	462,065	38,400	295,226	66
1945.....	215,712	40,800	382,286	51
1946.....	194,117	48,000	137,336	246

Table 149.—Imports of Aluminum and Bauxite into Canada, 1945 and 1946

Item	1945		1946	
	Cwt.	Value	Cwt.	Value
		\$		\$
Alumina.....	6,384	99,975	3,620	58,732
Bauxite ore.....	18,794,253	7,262,766	25,663,512	8,524,873
Cryolite.....	99,658	424,486	56,720	490,349
Aluminum—Pigs, ingots and blocks.....	1,013	19,383	4,924	83,970
Scrap.....	6,408	47,118	11,651	108,640
Angels, channels and beams.....	307	14,692	872	72,024
Bars, rods and wire.....	5,264	131,791	4,980	57,280
Leaf.....	.....	69,437	.....	97,861
Pipes and tubes.....	120	9,384	481	25,969
Plates, sheets and strips.....	16,332	476,162	83,361	2,314,616
Powder.....	46	4,435	228	19,449
Wire and cable.....	27	1,734	38	720
Household hollow ware.....	.....	98,186	.....	676,530
Manufactures n.o.p.....	.....	951,138	.....	2,161,739

Cwt. = 100 pounds.

Table 150.—Exports of Aluminum from Canada, 1945 and 1946

Item	1945		1946	
	Cwt.	Value	Cwt.	Value
		\$		\$
Aluminum—Scrap.....	130,335	770,825	129,155	935,670
Wire and cable.....		1,049,797		1,219,416
Manufactures, n.o.p.....		8,810,816		2,757,112
In bars, blocks, ingots and blooms.....	7,645,729	121,778,512	3,746,717	49,146,887
In rods, sheets and circles.....	37,821	1,070,281	48,977	1,307,178
Kitchen utensils and hollow ware.....		86,763		663,776

Table 151.—World Production of Aluminum, 1939, 1945 and 1946 (From the Annual Report of the American Bureau of Metal Statistics)

Country	1939	1945	1946
	(Metric tons)		
United States.....	148,367	450,403	371,614
Canada.....	75,152	195,694	175,500
Total America.....	223,519	646,097	547,114
Austria.....	4,283		1,039
France.....	52,500	37,225	50,500
Germany(*).....	195,145		
Great Britain.....	25,000	32,407	32,050
Italy.....	34,200		
Norway.....	31,130	4,608	
Spain.....	1,080	592	
Sweden.....	1,966		
Switzerland.....	28,000		
Total Europe(*).....	376,704		
Japan.....	30,000		
India.....		1,500	
Russia.....	73,000		Not available

(*) Including estimates for uncertain productions in Hungary and Yugoslavia.

ANTIMONY

Antimony continued in short world supply in 1946 largely due to decline in production from Bolivia. Production from China, which prior to the war was the chief producer, has not been fully resumed, although at the close of the year shipments of Chinese antimony said to be from current production were being offered. As a result of shortage antimony remained under Government control both as to price and use.

No metallic antimony has been produced in Canada since 1944 in which year Consolidated Mining and Smelting Company of Canada discontinued the production of electrolytic antimony. However the company continued the production of an antimonial lead (25 per cent antimony) from antimonial fume residues which are a by-product of its lead-zinc smelting operations at Trail, British Columbia.

Certain occurrences of antimony in Canada have been explored and developed to some extent, but results generally have not been favourable to prolonged mining operations. The following is a summary of the more important known occurrences of antimony.

In Nova Scotia, the West Gore deposit at West Gore, in Hants county, is the best known. For many years prior to 1917, some antimony was produced in the form of a concentrate containing gold.

In New Brunswick, stibnite occurs in quartz veins at Lake George in a deposit that appears to have some promise. Mining operations had been carried on intermittently over a number of years, the latest production being in the period 1929-31 when high-grade ore was shipped. Ore dumps on the property are understood to contain a substantial amount of antimony and the various quartz veins have not been thoroughly explored. At the end of 1946, negotiations were under way with a Canadian metal firm to exploit this deposit.

In British Columbia, there are several occurrences, a few of which have been developed to some degree. Test shipments were made from Bridge River area in 1941; and from the Fort St. James area in 1940 after the sinking of a test shaft.

Antimony is chiefly used in the manufacture of hard lead for storage batteries, and cable covering. It is alloyed with tin in the manufacture of babbitt bearings, and with lead and tin in solders and type metal. Its property of expansion on cooling when alloyed makes it particularly useful in the manufacture of type metal. During the war it was used to harden the lead used in bullets and to flame proof canvas goods used by the armed forces.

Sulphides of antimony are used as a pigment in paint manufacture, and in the making of india-rubber. The oxides of antimony are used in the ceramic enamel trade as an opacifier. Compounds of the metal are used in the medicinal trade.

Administrator's Order No. A-2245 which came into force on January 22, 1947, sets the maximum prices of antimony, according to the Wartime Prices and Trade Board, as "The maximum price at which antimony of Chinese grade or higher grade may be sold or purchased by any person shall, according to the quantity, be sold as follows:

Quantity	Montreal, Toronto and Hamilton (cents per pound)
10,000 lb and over.....	29.50
2,000 lb and less than 10,000 lb.....	30.25
1,000 lb and less than 2,000 lb.....	32.25
less than 1,000 lb.....	32.75

The said maximum prices are exclusive of sales tax."

E & M J Metal and Mineral Market average price for domestic antimony at New York was 17.306 cents in 1946, compared with 15.839 cents in 1945.

Table 152.—Production of Antimony in Canada, 1937-1946

Year	In Ores Exported		Metal Produced in Canada		Total	
	Pounds	\$	Pounds	\$	Pounds	\$
1937.....	48,163	7,394	.....	.....	48,163	7,394
1938.....	24,560	2,200	.....	.....	24,560	2,200
1939.....	25,405	3,139	1,200,180	148,330	1,225,585	151,469
1940.....	44,700	3,800	2,549,792	392,668	2,594,492	396,468
1941.....	15,292	2,141	3,169,785	443,770	3,185,077	445,911
1942.....	78	13	3,041,030	516,975	3,041,108	516,988
1943.....	.....	.....	1,114,166	189,408	1,114,166	189,408
1944.....	.....	.....	1,937,933	281,000	1,937,933	281,000
1945(*).....	.....	.....	1,667,951	290,557	1,667,951	290,557
1946(*).....	.....	.....	642,145	96,332	642,145	96,332

(*) No refined metal in 1945 or 1946; figures represent antimony content of antimonial lead.

Table 153.—Production of Antimony Metal in Canada, Consumption, Imports and Exports, 1937-1946

Year	Production in Canada	Consumption in Canada	Imports	Exports(*)
	(Tons of 2,000 pounds)			
1937.....	.....	430	588	.....
1938.....	.....	385	428	.....
1939.....	600	426	119	275
1940.....	1,275	558	118	359
1941.....	1,585	955	1	676
1942.....	1,521	1,187	.....	166
1943.....	557	1,303	120	6
1944.....	968	1,515	779	.....
1945.....	.....	778	517	.....
1946.....	.....	876	455	.....

(*) Shipped for export—data not available from Customs' Records.

Table 154.—Consumption of Antimony Metal, by Industries, 1942-1946

Industry	1942	1943	1944	1945	1946
(Tons of 2,000 pounds)					
Steel foundries.....	1				
White metal foundries.....	909	907	1,191	614	743
Electrical apparatus plants.....	117	165	183	114	78
Brass foundries.....	13	14	10	9	21
Non-ferrous smelters.....	44	134	76	1	
Silverware factories.....	7	8	8	9	29
Ammunition plants.....	91	71	41	26	
Miscellaneous.....	5	4	6	5	5
Total.....	1,187	1,303	1,515	778	876

BERYLLIUM

Beryl, a silicate of aluminum and beryllium, is the commonest beryllium mineral, and is the only present commercial source of the element. It generally contains from 10 to 12 per cent of beryllium oxide, corresponding to from 4 to 4.5 per cent of beryllium. The occurrence of beryl is restricted to pegmatite dykes, in which it is usually found as disseminated crystals, sometimes of very large size. Only rarely, however, is the beryl content of pegmatites sufficient to enable the deposits to be worked for this mineral alone, and a large part of the comparatively small world production has been obtained as a by-product from the mining of feldspar, mica, or lithium minerals.

Canada produces no beryl and very little beryl is used or required by domestic industries. Most of the world supply in recent years has come from Brazil, Argentina, India, the United States, and South Africa.

The most noteworthy occurrences of beryl in Canada are in Ontario, southeastern Manitoba, and the Northwest Territories.

In Ontario, intermittent work was done prior to 1941 on a beryl pegmatite in Lyndoch township, Renfrew county. A few tons of clean cobbled crystals were obtained, and about 200 tons of milling grade rock was stockpiled. Most of the work on the property was done by the present owners, Canadian Beryllium Mines and Alloys, Limited, 901 Royal Bank Building, Toronto, who, however, have reported no sales. A detailed examination of the main, easterly workings, made in 1943 by the Bureau of Mines, Ottawa, and the Metals Controller's Office, indicated an average content of 0.188 per cent beryl in the total rock excavated, with a maximum for the richest quarry sections of 1.24 per cent. Grade of selected clean beryl crystals was 10.41 per cent BeO.

In Manitoba a little work was done several years ago on beryl showings in pegmatites opened originally for feldspar and lithium minerals in the Winnipeg River and Oiseau (Bird) River areas, but no shipments were reported.

In the Northwest Territories, exploration in the area north and east of the Yellowknife gold camp has disclosed numerous occurrences of beryl in pegmatites which also contain lithium minerals and tantalite-columbite. Some of these are considered to be of possible economic interest.

In Quebec, scattered occurrences of beryl are known in La Corne and Preissac townships, Abitibi county, often associated with molybdenite. None of these, however, is believed to be of economic importance.

Beryllium is used chiefly in the form of beryllium-copper alloys, the most important of which contains about 2 per cent beryllium. A beryllium-aluminum alloy containing 5 per cent beryllium is used as a deoxidizer in making aluminum-magnesium products. Straight beryllium metal has only limited applications, notably for the windows of X-ray tubes, where it is used for its transparency to the rays.

Various beryllium salts, principally the oxide and carbonate, are used in industry. A growing demand has developed for the oxide for the preparation of zinc-beryllium silicate, used as a coating for fluorescent lighting tubes and lamps, and for fluorescent screens. The oxide and carbonate, activated by uranium salts or rare earths, act as "phosphors" and are utilized in luminescent paints. The oxide is a super-refractory, with a melting-point of 2,570°C., or 520 degrees above that of alundum, and is used in crucibles, insulators, electrodes, furnace linings, and as a filament coating in lamps. Beryllium acetate is used as a coagulating, hardening bath for sodium alginate, a new English textile made from seaweed.

Ground beryl is used as a batch ingredient in sparkplugs and other ceramic specialties, to which it imparts high electrical and impact resistance and transverse strength. Some is also used in cooking utensil enamels. Consumption for such uses in the United States is estimated at about 100 tons a year.

Most of the present world production of beryl is marketed in the United States, where the following companies, engaged in the primary production of beryllium metal, alloys and compounds are the chief purchasers: Beryllium Corporation of Pennsylvania, Temple (Reading), Pennsylvania; Brush Beryllium Company, 3714 Chester Avenue, Cleveland, Ohio; and Clifton Products Incorporated, Painesville, Ohio.

The New York price quotations remained steady throughout the year—Beryllium ore, per unit of BeO, 8 to 12 per cent, f.o.b. mine \$8-\$10—Beryllium-copper master alloy, 4 per cent beryllium, remainder copper, in lots 1 pound or more of beryllium, \$14.75 per pound of contained Be.

BISMUTH

Bismuth is produced in Canada by The Consolidated Mining and Smelting Company of Canada, Limited at Trail, B.C. from the residues resulting from the electrolytic refining of lead bullion. The plant has been operated intermittently since 1928. The capacity is 60 tons per year.

A recent producer is the La Corne mine, Quebec, operated by the Molybdenite Corporation of Canada which commenced the production of a 30 per cent bismuth concentrate in May, 1946. Prior to 1946 molybdenum concentrate produced by the La Corne mine contained undesirable amounts of bismuth and copper. During the war the concentrate was refined solely for its molybdenum content. A process was worked out in the Bureau of Mines Laboratory, Ottawa early in 1946 whereby the bismuth could be removed and sold at a relatively high price, and which improved the saleability of the molybdenite concentrate. The mine produced about 45 tons of bismuth concentrate before the end of the year.

The known deposits or occurrences of bismuth ore in Canada are few in number. It is possible, however, that the metal may occur with other molybdenite deposits of Canada as in the case of the La Corne mine.

Some bismuth ore was removed from the Glacier Gulch Group near Smithers, British Columbia on the Canadian National Railway. The bismuth associated with a gold ore was shipped to the smelter at Tacoma, Washington.

The greatest use of bismuth is in medicinal and cosmetic preparations. Bismuth is too brittle to be used alone, but its alloys find many uses in industry. Alloys are used in the manufacture of sprinkler plugs and other fire protection devices, electrical fuses, low melting solders, dental amalgams, and tempering baths for small tools. As does antimony, bismuth expands on solidification and retains this property in a number of alloys, and is used in type-metal. Salts of bismuth are used in the X-ray examination of the digestive tract due to the absorptive powers of bismuth for X-rays. A certain amount is used in optical glass manufacture.

E & M J Metal and Mineral Market prices for bismuth during 1946 was \$1.60 per pound in ton lots until December 2nd when the price was raised to \$1.80 to effect December, 1946, and later shipments.

Table 155.—Production of Primary Bismuth in All Forms(*) in Canada, 1937-1946

Year	Pounds	\$	Year	Pounds	\$
1937.....	5,711	5,654	1942.....	347,556	479,627
1938.....	9,516	9,754	1943.....	407,597	562,484
1939.....	409,449	466,362	1944.....	123,875	154,844
1940.....	58,529	81,004	1945.....	189,815	260,047
1941.....	7,511	10,396	1946.....	240,504	336,706

(*) Refined metal plus bismuth content of bullion exported.

Table 156.—Production of Bismuth Metal in Canada, Consumption, Imports and Exports, 1937-1946

Year	Production	Domestic Consumption	Exports(*)	Imports
(Tons of 2,000 pounds)				
1937.....		14	37	
1938.....		18	40	
1939.....	205	14	64	5
1940.....	20	12	77	
1941.....		16	51	
1942.....	159	36	199	
1943.....	204	65	73	
1944.....	62	46	25	
1945.....	95	35	41	
1946.....	120	40	95	

(*) Shipped for export by Canadian producers.

Table 157.—Consumption of Bismuth Metal in Canada, by Industries, 1942-1946

Industries	1942	1943	1944	1945	1946
(Tons of 2,000 pounds)					
Medicinals and pharmaceuticals.....	13	28	23	15	11
White metal foundries.....	13	28	20	16	23
Miscellaneous.....	10	9	3	4	6
Total.....	36	65	46	35	40

BORON

According to the United States Bureau of Mines, boron alloys are supplied by United States manufacturers, small quantities being used in the non-ferrous metals industries and in steel making. In cast iron, boron opposes graphitization on solidification and exerts an energetic whitening effect, producing a hard strong iron but reducing malleability. Recently boron has been found to be one of the so called minor elements that stimulate plant growth and inhibit the development of certain plant diseases.

The most interesting use of boron was in the production of "atomic bomb" constituents. It has a strong tendency to absorb neutrons, and as the net number available for a self-sustaining uranium fission reaction is very small, boron was not suitable as a "moderator"—that is, a mechanism for slowing neutron speeds to the range where they would be effective in disintegrating the U235 uranium isotope. How serious neutron loss was considered is indicated by the statement that high-purity graphite containing only about 2 parts per million of boron was undesirable as a moderator. However, the same characteristic makes boron useful in controlling the operating rate of the uranium-graphite piles used to produce the new element, plutonium. Boron or boron steel was so used. Boron trifluoride (BF₃) also was used in instruments employed for measuring neutron intensity in the piles.

Boron carbide, boron carbide shapes and calcium boride are now produced in Canada.

World reserves of boron minerals are abundant, but known sources are confined to a few countries chiefly the United States, Chile, Argentina, Peru, Italy and Turkey, although Borax also has been reported in Tibet, Persia, India and Ceylon.

Imports of Borax into Canada during 1946, in packages of 25 pounds or over, totalled 14,512,114 pounds valued at \$395,431. Borax was quoted in the United States in 1946 at \$41.50 per ton, granular technical.

CADMIUM

Cadmium occurs as a minor constituent in most zinc ores and in some lead ores. In Canada its production is limited to the by-product recovery from the manufacture of electrolytic zinc. Some important uses have been developed during the past fifteen years and indications are that a strong demand will continue for the metal.

Cadmium metal is produced by The Consolidated Mining and Smelting Company of Canada, Limited, at Trail, British Columbia, and by Hudson Bay Mining and Smelting Co. Limited at Flin Flon, Manitoba. The cadmium produced at Trail originates largely in the silver-lead-zinc ores of the Sullivan mine at Kimberley, B.C. A small amount is contained in zinc concentrate shipped to Trail from Zinco Mines Limited in the Slocan district. At Flin Flon it is contained in the copper-gold-zinc ores of the Flin Flon deposit on the Saskatchewan-Manitoba boundary. At Trail and Flin Flon cadmium is recovered from the residue resulting from the refining of zinc.

Cadmium is used mainly in electroplating and in the manufacture of alloys and compounds, the most common use being as a protective coating for steel. To a much lesser extent it is used in copper alloys. The use of cadmium alloys in motor vehicle bearings and for solders has created a strong demand for the metal. Cadmium is used also in the arts, paints, ceramics, and dyeing, etc.

Cadmium sulphide and cadmium sulphoselenide are standard agents for imparting bright resistant yellow and red colors respectively to paints, ceramics, inks, rubber, leather and other products. Paper coated with cadmium sulphide acts as a mustard-gas detector. Cadmium nitrate is used in white fluorescent lamp coatings. The oxide, hydrate and chloride are used in electro-plating solution; the carbonate in ceramics; and the halides in photography.

Cadmium is marketed in metallic form, 99.5 per cent pure and better, and as a sulphide. The principal compounds are cadmium sulphide, cadmium oxide, cadmium lithopone, and cadmium selenite.

The price of cadmium metal, E & M J Metal Markets, was 90 cents per pound at the beginning of 1946. The price rose to \$1.25 July 8th and a further rise to \$1.50 per pound was effective on December 2.

Table 158.—Production of Cadmium, in Canada, 1937-1946

	British Columbia		Manitoba		Saskatchewan	
	Pounds	\$	Pounds	\$	Pounds	\$
1937.....	436,431	715,747	164,223	269,326	144,553	237,067
1938.....	510,342	410,090	115,166	92,543	73,630	59,166
1939.....	799,253	563,241	73,830	52,029	66,608	46,939
1940.....	778,791	905,734	57,742	67,154	71,594	83,264
1941.....	1,081,374	1,269,533	61,085	71,714	108,832	127,769
1942.....	972,413	1,147,447	29,236	34,498	147,314	173,831
1943.....	598,673	688,474	20,985	24,130	166,955	191,998
1944.....	386,410	425,051	20,921	23,013	119,639	131,603
1945.....	510,432	505,328	27,891	27,612	107,741	106,663
1946.....	636,315	776,304	63,410	77,860	102,923	125,566

Table 159.—Consumption of Cadmium Metal in Canada, Consumption and Exports, 1937-1946

Year	Production	Domestic Consumption	Exports
	(Tons of 2,000 pounds)		
1937.....	372	33	283
1938.....	349	23	233
1939.....	470	41	525
1940.....	454	75	399
1941.....	625	149	455
1942.....	574	207	400
1943.....	393	168	286
1944.....	263	108	192
1945.....	319	87	175
1946.....	401	96	296

Note.—Statistics on imports are not available.

CALCIUM

The commercial production of calcium in Canada started in 1945 when the metal was recovered from lime by Dominion Magnesium Limited at its plant located at Haley, Ontario.

Calcium has found increasing use as a deoxidizer in ferrous metallurgy and as an alloy constituent with non-ferrous metals. It has been employed in the reduction of difficultly reducible metals, such as chromium, thorium, uranium, and zirconium. During the war an important calcium use was to make hydride, which is a convenient and portable source of hydrogen for inflating weather balloons. Uranium metal had been made by reaction of calcium with chloride or oxide and by reducing the oxide with calcium hydride; the latter was perhaps the first-applied (1941) relatively large scale production method. The uranium was, however, in the form of highly impure pyrophoric powder and was not usable in the atomic bomb project. However, by the end of 1942 acceptable metal was being turned out.

New York quotations for calcium, 97-98 per cent as cast, was \$1.85 per pound. The Canadian producer is able to sell an exceptionally high purity product for two-thirds of the quoted price.

Table 160.—Production of Calcium in Canada, 1945 and 1946

Year	Pounds	\$
1945.....	22,720	19,312
1946.....	53,548	68,720

CERIUM

Cerium is obtained from monazite, a monoclinic phosphate of cerium metals containing about 32 per cent cerium oxide (Ce_2O_3) and up to 18 per cent thoria (ThO_2). Monazite is distributed widely in igneous rocks throughout the world, especially in gneisses that have been intruded by pegmatites, but usually it forms only a small fraction of one per cent of the containing rock and only the natural concentrations in stream gravels and beach sands have paid for exploration. The chief commercial sources of monazite sand are beach deposits in Brazil and India. There are a few occurrences of monazite in Nova Scotia, Quebec and British Columbia, none of which is of commercial interest. It is usually found as small crystals in granites and pegmatites in the Canadian Shield and small quantities occur in association with the black sands of the Quesnel river, Lilloet district, British Columbia. In the United States there are commercial deposits in Carolina, Florida, and Idaho, and known occurrences in many other States.

Cerium is usually regarded as belonging to the general group of "rare earths", as it invariably occurs in nature associated with the other fourteen members of the group and is very similar to the other rare-earth elements in many of its chemical properties.

In Canada, Shawinigan Chemicals, Limited, Shawinigan Falls, Quebec, has been producing cerium products from cerium chloride since 1940. The output is sold to the Belgo Canadian Manufacturing Company, Limited, of Montreal, for the manufacture of sparking flints.

Prior to the war leading producers of rare-earth products for the European market were located in Berlin, London and Paris, and those for the American market, in Chicago. In the United States the present supply of cerium products is provided by Cerium Metals Corporation, Niagara Falls, N.Y.

World production of monazite is approximately 5,000 tons a year.

Thoria, which was used in gas mantles, was formerly the only commercial constituent of monazite, and monazite is still marketed on the basis of its thoria content, although its content of ceria (Ce_2O_3) and of other rare-earth oxides is of chief interest at present. Probably 50 per cent of monazite derivatives are consumed, chiefly as fluorides, in the cores of arc carbons to increase lighting intensity in searchlights, motion-picture projectors, and therapeutic lamps. About 25 per cent of the consumption of monazite derivatives is used in pyrophoric (sparking) alloys or in ferroceriums for use in sparking flints for lighters. The remainder is used for a variety of purposes, but principally for making optical glassware. Cerium metal is used in the evacuation of radio tubes.

Imports of salts of cerium or of thorium, for the manufacture of gas mantles, was appraised at \$33,074 in 1946 compared with \$12,428 in the preceding year.

CHROMITE

Pure chromite (FeO , Cr_2O_3) contains 68 per cent chromic oxide, but in nature it always contains besides iron, varying amounts of magnesia and alumina. It is a heavy, almost black, lustrous and brittle mineral, and the ore usually occurs in dunite bands in serpentine rocks. Chromite is distinguished in the field from other black minerals of similar appearance by its chocolate brown powder or streak when struck, or scratched with a hammer.

Most of the Canadian deposits from which production has been obtained are between Quebec City and Sherbrooke in the Eastern Townships of Quebec.

Chromite Limited obtained its output from the old Sterrett mine in Cleveland township, Quebec. The chromite occurs as fairly uniformly disseminated zones, scattered through which are plums of the massive mineral. The ore zone, which varies in width from 5 to 20 feet, has been traced on the surface for about 2,000 feet. The mine has been developed at 5 levels to a maximum length of 1,800 feet and to a depth of 550 feet. The ore, which averaged 18 per cent Cr_2O_3 , was treated in a 150 ton mill.

The old Montreal pit was operated over 50 years ago and was re-opened by Union Carbide Company in 1941, since when production has been continuous.

The Chromeraine mine, also in the Black Lake area, was operated in 1943 by Wartime Metals Corporation, but was closed in August, 1944. The ore is chiefly low-grade, banded and disseminated chromite, averaging 8 per cent Cr_2O_3 , with a small amount of the massive mineral. The zone has been traced intermittently for 2,000 feet, has an average width of 33 feet, and in places is 60 feet wide. A small amount of drilling has indicated that the ore extends to a depth of at least 440 feet.

Chromite Association did some prospecting in the Black Lake district in 1945.

In Manitoba, little prospecting was done on the large bodies of low-grade chromite deposits that were discovered early in 1942, north of Oiseau (Bird) River in the southeastern part of the province. Various zones have been traced for lengths of several thousand feet. The ore is high in iron and an economical method of bringing the chrome-iron ratio to within market requirements has not been devised.

The uses of chromite are divided into three groups, namely, metallurgical (by far the most important), refractory and chemical.

In the metallurgical field, chromium is one of the principal alloying elements in a great variety of steels, chief of which in the amount of chromium used are the stainless and the corrosion-resistant steels. It is the vital ingredient with nickel and molybdenum in the making of armour

plate, armour-piercing projectiles, and high-speed tool steels, and is used as a hard, toughening element in tank axles and frames, in aeroplane parts, and in other essential war materials.

Chrome ore is used for making refractory bricks or materials used in basic open hearth furnaces, in arches of furnaces, in parts of combustion chambers, chambers of high pressure steam boilers, etc. It is used with magnesia to make chrome-magnesia refractories, an important use in Canada being in the manufacture of brucite magnesia bricks that contain up to 30 per cent Cr_2O_3 .

In the chemical industry, chromite is mainly fundamental salts such as sodium and potassium-bichromates that are used in electroplating, tanning, dyeing, glass making, pigments, photography, bleaching, safety matches, antiseptics, some aniline dyes used in printing, etc. Finely powdered chrome oxide is used as a buffing compound for polishing stainless steels. During the war a large amount of chrome chemicals was used for military purposes.

The principal Canadian buyers of chromite for metallurgical use are: Chromium Mining and Smelting Corporation, Sault Ste. Marie, Ontario, and Electro-Metallurgical Company of Canada, Welland, Ontario. The only important purchaser of refractory ore is Canadian Refractories, Limited, Canada Cement Building, Montreal.

At the end of 1946 United States price of domestic and imported ores of 48 per cent Cr_2O_3 and 3 to 1 ratio was \$39.00; ores of lower grade and ratio vary down to a minimum of \$27.00 a long, dry ton at seaboard. Canadian prices of 47 to 48 per cent Cr_2O_3 concentrates are \$25 to \$40 and crude ore \$15 to \$20 a long ton, f.o.b. mines, depending upon the chrome-iron ratio and upon the percentages of certain impurities.

Table 161.—Production of Chromite in Canada, 1937-1946

Year	Short tons	\$	Year	Short tons	\$
1937.....	(*)	43,250	1942.....	11,456	343,568
1938.....			1943.....	29,595	919,878
1939.....			1944.....	27,054	748,494
1940.....	335	5,780	1945.....	5,755	160,752
1941.....	2,372	42,679	1946.....	3,110	61,123

(*) Quantity not published.

Table 162.—Principal Statistics for the Chromite Mining Industry(*) in Canada 1944-1946

		1944	1945	1946
Active firms.....	No.	7	4	2
Employees—Salaried.....	No.	42	7	6
Wage-earners.....	No.	202	23	16
Total.....	No.	244	30	22
Salaries and wages—Salaries.....	\$	80,065	12,590	13,000
Wages.....	\$	293,529	22,609	17,056
Total.....	\$	373,594	35,289	30,056
Gross value of production.....	\$	748,494	160,752	61,123
Fuel and electricity used.....	\$	60,009	8,224	8,299
Process supplies used.....	\$	83,828	15,023	10,000
Freight.....	\$	45,373		
Net Value.....	\$	559,284	137,505	42,824

(*) All in the province of Quebec.

Table 163.—Imports of Chrome Ores into Canada, 1938-1946

Year	Tons	\$	Year	Tons	\$
1938(*).....	9,103	142,399	1943.....	103,471	2,121,228
1939.....	16,584	232,851	1944.....	39,089	618,231
1940.....	29,938	554,413	1945.....	60,691	1,154,985
1941.....	92,952	1,460,209	1946.....	15,836	269,248
1942.....	87,628	1,271,482			

(*) Nine months only—not shown separately prior to April 1938.

Table 164.—Imports of Chrome Ores into Canada, by Principal Countries of Supply, 1945 and 1946

Imported from	1945		1946	
	Tons	\$	Tons	\$
British South Africa.....	2,420	76,197	11,040	118,556
Southern Rhodesia.....	31,590	458,176		
British India.....	14,660	223,918		
Cuba.....	71	1,956	159	4,394
Turkey.....	828	35,711	2,023	64,685
United States.....	11,122	359,027	2,614	81,613
Total.....	60,691	1,154,985	15,836	269,248

INDIUM

Indium was commercially recovered in Canada only in 1942 when 470 troy ounces valued at \$4,710 were produced at Trail, British Columbia by the Consolidated Mining and Smelting Company of Canada, Limited. The metal was obtained in the treatment of zinc refinery residues. The United States produces a considerable quantity of indium but data relating to entire world production are not available.

The major use has been in heavy-duty composite metal bearings employed extensively in aeroplanes, tanks and other mobile equipment. A zinc-indium alloy was used in applying a non-corrosive plating to hollow-steel aeroplane propellers. Minor uses have been in solder and brazing alloys and alloyed with gold and silver for jewelry and plated articles. The first commercial use about 1927 was as a nontarnish coating on silverware. Low-melting-paint alloys also have been manufactured recently. Indium foil was used as a neutron indicator in the atomic bomb project uranium-graphite piles. Low-energy neutrons, about 1.5 electron-volt, are particularly effective in inducing artificial radioactivity in indium.

Quoting from E & M J Metal and Mineral Markets—June 28, 1945—"The price situation in indium remains unsettled. During the last week producers lowered the quotation to \$3 an ounce troy, a reduction of \$1. Supplies are ample, reflecting increased recovery of this by-product of zinc operations that has occurred in recent years. Use of indium has expanded but not at a rate to keep pace with production. At the beginning of the year indium was quoted at \$7.50 an ounce troy and a year prior to that at \$10."

At the close of 1945 the quoted price of indium was \$2.25 per ounce troy. The price remained at this level through 1946.

IRON ORE

Only two of the many known iron-bearing districts in Canada produced ore in 1946, namely Michipicoten, northeast of Lake Superior, and Steep Rock, 150 miles west of Port Arthur. No work was done on the magnetite deposits of eastern Ontario. Plans for the use of the magnetite ore of the Pacific coast did not mature.

ALGOMA ORE PROPERTIES, LIMITED—HELEN MINE—The large body of siderite at the Helen mine extends several thousand feet eastward from the original hematite deposit from which 2,520,865 long tons of ore was shipped between 1900 and 1918. The siderite has been drilled beneath the former hematite deposit and eastward beneath the siderite outcrop, to outline 100,000,000 tons of siderite ore.

During 1946 ore was extracted from two open-pits, the New Helen pit adjacent on the east of the former hematite deposit, and the Victoria pit, about $\frac{3}{4}$ mile to the east of the New Helen pit. The crude ore from the Victoria pit was treated by the sink and float process to reduce the silica content.

The New Helen and Victoria pits furnished 843,420 long tons of siderite to the sintering plant on the Algoma Central Railway at Wawa. The Josephine mine, 8 miles northeast of the Helen mine shipped 97,480 long tons of hematite concentrate to Wawa. From this siderite and hematite there was made 552,056 long tons of sinter. Somewhat more than half this sinter was used in the furnaces of Algoma Steel Corporation at Sault Ste. Marie, Ontario, owners of the mine, and the remainder was exported to the United States. Algoma Ore Properties is the sales agent.

MICHIPICOTEN IRON MINES, LIMITED—JOSEPHINE MINE—On September 15, 1946 caving commenced above one of the stopes and continued through the surface, which is the bottom of a small lake that had been drained to facilitate mining. This let into the mine an estimated 80,000 cubic yards of mud and slime which flooded the lower levels. As the mine had been operated as a loss up to this time, Sherritt Gordon Mines Limited, (which controls Michipicoten Iron Mines Limited) decided not to pump it out.

STEEP ROCK IRON MINES, LIMITED—STEEP ROCK MINE—Preparations were commenced to open the "A" orebody, $1\frac{1}{2}$ miles north of "B". This involves some preliminary drilling, pumping out the remainder of the Middle Bay of Steep Rock Lake, and removing the overburden. The surface of "B" orebody lies 170 feet, and "A", 333 feet below the former surface of the lake. From the preliminary drilling, it appears that "A" orebody will be capable of providing an annual output somewhat larger than that from "B", after it has been fully prepared for mining. It is estimated that two or three years will be required to complete the preparations, though a limited output may be attained in the meantime.

Steep Rock crude ore is separated by screening into three shipping grades.

Shipments in 1946 were all made through the ore dock of Canadian National Railways at Port Arthur. Most of the ore was sold in the United States, Cleveland-Cliffs Iron Company being the sales agent.

LABRADOR AND QUEBEC—Prospecting of this extensive iron range, astride the Labrador-Quebec boundary in the central part of the Ungava peninsula, has indicated high-grade hematite deposits for a length of 100 miles. The width of the iron-bearing formation varies from 20 to 40 miles. It has been impossible up to present to cover the whole of this large area of 3,000 square miles or more of favourable ground with more than rather cursory and wide-spaced traverses. Work has been concentrated on the central section about 50 miles in length and 5 miles in width within which are located most of the large and high-grade deposits so far discovered. Within and beyond this central area, large deposits of medium grade ore (40 to 50 per cent iron in the outcrops) have been found, as well as very large areas of the siliceous iron formation. On none of these deposits has enough work been done to determine the full dimensions. Hollinger North Shore Exploration Company, a subsidiary of Hollinger Consolidated Gold Mines Limited, holds the concession on the Quebec side of the border, and Labrador Mining and Exploration Company Limited, controlled by Hollinger Consolidated, the concession on the Labrador side. M. A. Hanna Company of Cleveland has a minority interest.

Development work during the brief field season of 1946 consisted mainly of drilling on some of the larger outcrops in the central section astride the height-of-land which constitutes the Quebec-Labrador boundary. This drilling showed that, in some deposits at least, the hard, dense hematite of the surface outcrops constitutes a covering or crust on top of softer ore that resembles fairly closely the characteristic high-grade ore of the Mesabi range in Minnesota. Several of the outcrops are thousands of feet in length and hundreds of feet in width. A satisfactory depth has been determined in several places. There is thus some definite evidence that large open-pit operations can be established in due course.

Table 165.—Principal Statistics for the Iron Ore Mining Industry in Canada, 1944-1946

	1944	1945	1946
Active firms.....No.	8	10	11
Employees—On salary.....No.	99	145	72
Wage-earners.....No.	580	657	751
Total.....No.	679	802	823
Salaries and Wages—Salaries.....\$	242,271	272,716	224,505
Wages.....\$	1,220,182	1,481,956	1,719,931
Total.....\$	1,462,453	1,754,672	1,944,436
Gross value of production.....\$	1,909,608	3,635,095	6,822,947
Fuel and electricity used.....\$	642,761	709,398	687,011
Process supplies used.....\$	200,438	304,666	604,081
Freight and treatment charges.....\$	276,653	1,367,526	2,065,095
Net Value.....\$	789,756	1,253,505	3,466,760

Table 166.—Production of Iron Ore(*) in Canada, 1939-1946

Year	Short tons	Value	Year	Short tons	Value
		\$			\$
1939.....	123,598	341,594	1943.....	641,294	2,032,240
1940.....	414,603	1,211,305	1944.....	553,252	1,909,608
1941.....	516,037	1,426,057	1945.....	1,135,444	3,635,095
1942.....	545,306	1,517,077	1946.....	1,549,523	6,822,947

(*) Exclusive of titanium-bearing ores. All iron ore was from mines in Ontario, except 187 tons from Quebec in 1942 and 143,062 tons from New Brunswick in 1943.

Table 167.—Imports into Canada and Exports of Iron Ore, 1937-1946

Year	Imports		Total(*)	Exports
	From United States	From New-foundland		
	(Tons of 2,000 pounds)			
1937.....	1,416,015	1,188,771	2,124,972	4,644
1938.....	631,031	607,025	1,302,430	209
1939.....	1,205,261	1,606,775	1,764,844	10,540
1940.....	524,849	716,317	2,418,237	251,626
1941.....	2,212,437	962,259	3,254,655	282,068
1942.....	2,033,961	610,871	2,701,968	295,960
1943.....	2,978,388	911,450	3,906,425	374,677
1944.....	2,501,737	624,890	3,126,649	308,424
1945.....	2,988,484	736,665	3,739,867	771,495
1946.....	1,686,236	518,566	2,281,677	1,145,256

(*) Includes some ore from other countries, principally Brazil.

Table 168.—Iron Ore Charged to Iron Blast Furnaces in Canada, 1937-1946

Year	Canadian	Imported	Total
(Tons of 2,000 pounds)			
1937.....		1,796,562	1,796,562
1938.....		1,382,565	1,382,565
1939.....	50,570	1,425,536	1,476,106
1940.....	154,643	2,188,074	2,342,717
1941.....	166,263	2,542,826	2,709,089
1942.....	329,253	3,383,439	3,612,692
1943.....	302,730	2,955,671	3,258,451
1944.....	266,150	3,227,039	3,493,189
1945.....	235,757	2,787,697	3,023,454
1946.....	358,173	2,167,900	2,526,073

The Primary Iron and Steel Industry

Table 169.—Provincial Distribution of Active Plants in the Primary Iron and Steel Industry, 1946

Province	Number of firms	Pig Iron		Steel Ingots and Castings		Rolling and drawing mills	Ferro-alloys (a)
		Number of plants	Number of blast furnaces	Number of plants	Number of steel furnaces		
Nova Scotia.....	3	1	4	2	17	2	1
Quebec.....	13	.....	.....	10	22	3	.....
Ontario.....	17	3	10	11	74	10	3
Manitoba.....	3	.....	.....	3	5	1	.....
Alberta.....	2	.....	.....	2	2	.....	.....
British Columbia.....	7	.....	.....	7	11	.....	.....
Canada(b).....	45	4	14	35	131	16	4

(a) Not including artificial abrasive plants which made ferrosilicon as a by-product.

(b) Some firms operate in more than one province.

Table 170.—Principal Statistics of the Primary Iron and Steel Industry, 1946

Province	Number of plants	Average number of employees	Salaries and wages	Cost of fuel and electricity at works	Cost of materials at works	Gross selling value of products at works
			\$	\$	\$	\$
Nova Scotia.....	5	4,377	7,752,182	1,711,984	9,176,713	14,942,738
Quebec.....	14	3,691	6,978,934	1,477,899	5,217,082	19,097,206
Ontario.....	27	15,078	34,064,990	9,415,101	52,829,743	114,303,838
Manitoba.....	4	788	1,257,032	365,680	1,068,935	3,696,512
Alberta.....	2	.....	.....	.....	.....	.....
British Columbia.....	7	262	462,759	61,459	175,960	1,042,322
Canada.....	59	24,196	50,515,897	13,032,123	68,468,433	153,082,616
Per cent change 1946 from 1945.....	.....	-17.6	-12.7	-18.6	-20.8	-20.4

NOTE.—Profits or losses cannot be calculated from above figures as data are not available for general expense items such as interest, rent, depreciation, taxes, insurance, advertising, etc.

Table 171.—Materials Charged to Iron Blast Furnaces, 1945 and 1946

Material	1945		1946	
	Quantity	Cost at furnace	Quantity	Cost at furnace
	Net tons	\$	Net tons	\$
Iron ore—Canadian (crude).....	56,082	245,636	82,461	368,506
Imported (crude).....	2,228,075	9,707,841	1,644,113	6,764,781
Canadian (beneficiated).....	179,675	759,447	275,712	1,208,210
Imported (beneficiated).....	569,622	2,484,705	523,787	2,141,401
Mill cinder, roll scale, flue dust, etc.....	281,189	1,255,914	161,679	643,321
Serap (net charge).....	37,067	374,158	23,070	271,000
Limestone—				
From Canadian quarries.....	240,247	346,000	189,794	280,911
From foreign sources.....	516,931	699,477	433,153	559,384
Dolomite.....	39,418	56,520	20,955	27,056
Coke.....	1,631,852	15,447,205	1,320,620	13,422,208
Other materials.....	.....	269,277	.....	309,841
Total.....	.....	31,616,180	.....	25,996,619

Table 172.—Production of Pig Iron and Sales by Producers, 1945 and 1946

Grade	Delivered in molten condition	Machine cast	Total tonnage made	Sales	
				Quantity	Income from sales
	Net tons	Net tons	Net tons	Net tons	\$
1945					
Basic.....	1,292,264	127,941	1,420,205	82,329	1,676,071
Foundry.....		198,244	198,244	195,371	4,195,823
Malleable.....		159,500	159,500	151,202	3,655,132
Total.....	1,292,264	485,685	1,777,949	428,902	9,527,026
1946					
Basic.....	1,012,842	95,953	1,108,795	26,202	617,806
Foundry.....		151,223	151,223	148,119	3,565,819
Malleable.....		146,234	146,234	146,204	3,903,778
Total.....	1,012,842	393,410	1,406,252	320,525	8,087,403

NOTE.—Silvery pig iron has been included with ferro-alloys.

Table 173.—Imports into Canada and Exports of Pig Iron, 1936-1946

	Imports		Exports	
	Net tons	\$	Net tons	\$
1936.....	4,435	74,589	15,572	304,682
1937.....	7,135	144,354	43,138	851,701
1938.....	2,377	62,494	11,811	224,261
1939.....	657	15,176	12,015	221,787
1940.....	29,703	672,489	4,113	101,126
1941.....	4,729	131,112	380	10,090
1942.....	1,536	42,718	427	12,175
1943.....	7,118	173,598	438	11,163
1944.....	8,516	235,666	5,698	123,681
1945.....	7,589	231,062	21,854	493,159
1946.....	12,125	344,529	939	23,673

Table 174.—Consumption of Pig Iron in Canada, by Industries and by Provinces, 1943-1946 (as reported by consumers)

	1943	1944	1945	1946
	Net tons	Net tons	Net tons	Net tons
(a) BY INDUSTRIES				
Steel ingots and castings.....	1,518,548	1,513,586	1,416,844	1,085,005
Iron castings.....	169,272	171,397	173,185	173,557
Boilers, tanks and platework.....	27,593	27,897	36,476	36,002
Agriculture implements.....	17,483	17,511	26,521	27,288
Machinery.....	21,011	21,170	22,149	25,784
Automobiles.....		5,197	5,197	7,372
Automobile parts.....	12,785	35,540	10,641	9,740
Railway rolling stock.....	24,518	31,638	28,234	21,526
Brass and copper products.....	1,461	1,104	2,170	3,851
Shipbuilding.....	1,233	1,749	3,488	939
Hardware and tools.....	1,966	2,205	3,223	3,480
Miscellaneous iron and steel.....	713	673	775	1,167
Heating and cooking apparatus.....	24,601	23,087	26,321	22,393
Electrical apparatus and supplies.....	2,150	2,954	4,426	2,782
Total.....	1,823,334	1,855,708	1,759,650	1,420,886
(b) BY PROVINCES				
Prince Edward Island.....	65	80	97	45
Nova Scotia.....	384,528	393,008	393,291	295,705
New Brunswick.....	3,723	3,450	4,413	3,786
Quebec.....	73,992	73,022	101,107	74,961
Ontario.....	1,350,304	1,378,233	1,245,198	1,031,843
Manitoba.....	4,948	2,770	7,679	11,347
Saskatchewan.....		115	58	70
Alberta.....	120	76	164	221
British Columbia.....	5,654	4,954	7,643	2,908
Canada.....	1,823,334	1,855,708	1,759,650	1,420,886

Table 175.—Production of Ferro-Alloys, 1936-1946

Year	Net tons	Year	Net tons
1936.....	85,438	1941.....	204,354
1937.....	91,921	1942.....	209,017
1938.....	62,637	1943.....	197,094
1939.....	85,540	1944.....	171,323
1940.....	149,394	1945.....	178,109
		1946.....	145,022

Table 176.—Production of Steel Ingots and Steel Castings and Sales by the Producers, 1945 and 1946

	1945			1946		
	Total tonnage of steel made (all kinds) including alloys	Sales		Total tonnage of steel made (all kinds) including alloys	Sales	
		Quantity	Income from sales		Quantity	Income from sales
	Net tons	Net tons	\$	Net tons	Net tons	\$
STEEL INGOTS—						
Basic open hearth.....	2,399,858	23,488	882,918	1,897,960	38,903	1,496,658
Electric.....	357,291	21,784	2,490,922	353,781	3,685	815,617
Total Steel Ingots.....	2,757,149	45,272	3,373,840	2,251,741	42,588	2,312,275
STEEL CASTINGS—						
Basic open hearth.....	31,216	31,365	6,532,300	24,566	23,482	5,153,218
Converter.....	942	974	276,265	600	620	197,491
Electric.....	88,620	70,636	17,939,318	50,378	51,173	13,306,597
Total Steel Castings.....	120,778	102,975	24,747,883	75,544	75,275	18,657,306
Total Steel Ingots and Castings.....	2,877,927	148,247	28,121,723	2,327,285	117,863	20,969,581
Any other products.....		23,033	3,242,415			893
Total All Products.....		171,280	31,364,138			20,970,474
Alloy steel included in above—						
Ingots.....	305,542	4,569	702,610	100,016	533	80,000
Castings.....	14,022	10,563	3,369,705	10,697	10,335	2,855,062
Total.....	319,564	15,132	4,072,315	110,713	10,868	2,935,062

Table 177.—Summary of Steel Furnace Capacity, December 31, 1946

	Number of furnaces	Total annual capacity
		Net tons
Basic open hearth.....	49	2,796,876
Electric.....	79	751,941
Converter.....	3	10,100
Total.....	131	2,558,917
Steel ingots—Basic open hearth.....		2,745,500
Electric.....		470,790
Total.....		3,216,290
Steel castings.....		342,627
Total Ingots and Castings.....		3,558,917

Table 178.—Materials Used in Steel Furnaces, 1945 and 1946

Material	1945		1946	
	Quantity	Cost of purchased materials	Quantity	Cost of purchased materials
	Net tons	\$	Net tons	\$
Pigiron—Own make.....	1,363,495	.....	1,062,013	.....
Purchased.....	53,349	1,243,241	22,992	587,308
Scrap iron or steel—Own make.....	876,275	.....	723,365	.....
Purchased.....	865,620	15,370,285	793,649	14,701,571
Spiegeleisen.....	3,404	171,614	3,319	166,156
Silicospiegeleisen.....	176	14,670	130	11,019
Ferromanganese—High carbon.....	5,585	656,257	4,088	495,606
Medium carbon.....	14,046	1,726,290	9,285	1,185,983
Low carbon.....	565	96,335	450	80,393
Silicomanganese.....	7,967	899,689	5,131	580,570
Ferrosilicon—15%.....	2,319	124,723	2,225	103,669
25%.....	1,049	63,059	95	5,500
50%.....	6,426	427,822	4,845	311,148
75%.....	202	24,897	94	11,215
85-90%.....	212	30,815	153	24,459
Ferrochrome (including chrom-x)—High carbon.....	1,582	323,694	752	137,701
Low carbon.....	1,173	436,469	879	136,225
Ferromolybdenum.....	71	110,897	166	186,271
Ferrophosphorus.....	423	37,101	310	26,717
Ferroselenium.....	1	2,277	2	3,196
Ferrotitanium.....	656	123,975	416	73,485
Ferrotungsten.....	138	455,317	260	402,174
Ferrovanadium.....	57	188,661	46	139,197
Ferrozirconium.....	5	836	34	2,617
Calcium silicon.....	206	67,130	22	6,431
Calcium manganese silicon.....	589	193,020	299	95,986
Other ferro-alloys.....	.....	943	.....	40,476
Aluminum ingot and shot.....	828	197,132	678	160,925
Copper ingots, cakes, shot, etc.....	131	30,023	264	59,054
Nickel.....	1,523	916,645	577	340,552
Other metals.....	.....	75,189	.....	28,824
Ore, iron, crude.....	106,614	1,068,504	132,613	1,094,071
Ore, manganese.....	.....	2	.....	125
Ore, chrome.....	745	35,998	424	22,591
Ore, tungsten.....	197	395,674	1	278
Bentonite.....	3,161	83,424	2,786	64,912
Coal, anthracite.....	309	4,005	340	4,428
Coal, bituminous.....	323	3,655	437	4,332
Coke.....	4,512	53,032	6,919	82,029
Charcoal.....	145	6,713	111	4,634
Dolomite—Crude.....	71,060	209,716	66,262	203,328
Calcined.....	6,146	111,581	3,788	66,473
Fluorspar.....	19,462	669,813	13,805	456,443
Ganister.....	5,568	17,948	3,783	13,179
Graphite.....	526	53,955	511	80,312
Lime.....	64,294	436,239	50,936	344,619
Limestone—Canadian.....	94,010	158,008	79,863	136,054
Imported.....	123,489	159,971	101,577	126,376
Magnesite.....	17,016	680,538	12,311	503,298
Electrodes.....	.....	929,529	.....	755,375
Silica sand—For moulds.....	75,619	512,848	58,967	358,899
For sand blasting.....	5,260	51,508	3,906	41,593
Other foundry sands.....	.....	80,691	.....	32,722
Firebrick, fireclay and other refractories.....	.....	2,287,145	.....	1,433,935
Calcium molybdate.....	115	116,753	17	26,352
Molybdenum trioxide (molybdic oxide) briquettes.....	314	517,138	37	52,347
All other materials.....	.....	2,936,078	.....	1,154,431
Total value of metals, ores and other materials used.....	.....	35,589,520	.....	27,347,564

MAGNESIUM

Production of magnesium in Canada in 1946 was confined to a small tonnage made in a pilot plant operated by Aluminum Company of Canada at Arvida, Quebec. Based on data obtained from this work, the company is building an electrolytic magnesium plant having an initial rated capacity of 1,000 tons a year. The raw material will be magnesite obtained from brucitic limestone at the company's Wakefield, Quebec, plant.

Dominion Magnesium Limited, Haley, Ontario, shipped a considerable tonnage of magnesium from stock and also made and shipped various magnesium alloys, but there was no production of the metal.

Progress was made in developing and furthering the use of magnesium and its alloys and prospects are good for the greater utilization of this light metal in the near future.

Light Alloys Limited, Renfrew, Ontario, enlarged the capacity of its magnesium foundry and installed die-casting equipment. Magnesium foundries were also operated by Robert Mitchell Company, Limited, Montreal, and by Western Magnesium Limited, Vancouver.

Dolomite, the double carbonate of calcium and magnesium, and which contains 13 per cent of magnesium, is found in all provinces of Canada except Prince Edward Island. It is particularly abundant in Ontario and Manitoba.

Magnesite, the carbonate of magnesium, containing 28.7 per cent magnesium, and hydro-magnesite, containing 26.5 per cent of magnesium, are available in British Columbia. Deposits of magnesian dolomite consisting of an intimate mixture of magnesite and dolomite occur in Argenteuil county, Quebec, where they are being worked for the production of basic refractories. The magnesite deposits in British Columbia are undeveloped, but magnesium has been made from them on an experimental scale. Magnesian dolomite possesses no advantages over dolomite or magnesite as a source of magnesium.

Brucite, in the form of granules 1 to 4 mm. in diameter thickly disseminated throughout crystalline limestone and forming 20 to 35 per cent of the volume of the rock, occurs in large deposits in Ontario and Quebec. Brucite is the hydroxide of magnesium and contains 41.6 per cent of magnesium. The Canadian deposits are the largest known in the world. The brucite is being recovered in the form of granules of magnesia from one of these deposits near Wakefield, Quebec, and though the granular magnesia so obtained is being used principally for the manufacture of basic refractories and as an ingredient in chemical fertilizers, it is a very suitable raw material for the production of magnesium metal.

Serpentine, the silicate of magnesium, contains 25.8 per cent of magnesium, and occurs in many deposits throughout Canada. It is also available in huge waste dumps aggregating probably 100,000,000 tons in the asbestos-producing region of Quebec. The average magnesium content of these dumps is about 23 per cent. A process has been worked out for the recovery of magnesium from serpentine.

Sea-water, although it contains only 0.13 per cent magnesium, is a source of the metal in England and the United States. Dolomitic lime is used to precipitate the magnesia from the sea-water in the form of hydroxide, and the magnesia from both is recovered in the process.

Underground brines containing MgCl_2 and residual brines from salt-making operations, containing MgCl_2 , are used in the United States as sources of magnesia and magnesium, but brines containing sufficient MgCl_2 to render them of value are not available in Canada.

Processes for the production of the metal from the various raw materials may be divided into two groups, namely, electrolytic, and thermal. The electrolytic process provides most of the magnesium made, except in Canada where a thermal reduction process is used. The three thermal reduction processes in use throughout the world involve reduction of magnesia with carbon (in use in the United States); reduction of magnesia with calcium carbide (in use in the United Kingdom); and reduction of calcined dolomite with ferrosilicon (in use in Canada, the United States, and Italy).

The field of usefulness of magnesium is steadily expanding. Magnesium was formerly used almost exclusively in pyrotechnics, but it is used also as a structural metal, particularly in the form of castings and extruded shapes. For structural use it is alloyed with various portions of other elements. It is used as a constituent in many aluminum-base alloys.

The price quoted by Engineering and Mining Journal for magnesium in ingot form in carload lots during 1945 was $20\frac{1}{2}$ cents per pound, U.S. currency, f.o.b. New York.

Table 179.—Production of Primary Magnesium Metal in Canada, 1916-1918 and 1941-1946

Year	Quebec		Ontario		British Columbia		Canada	
	Pounds	\$	Pounds	\$	Pounds	\$	Pounds	\$
1916-1918.....	(a)	(a)	.....	.....	(b) 200,000	(b)	.....	.....
1941.....	.....	.....	.....	.....	(c) 10,905	2,944	10,905	2,944
1942.....	141,081	62,076	473,910	208,520	193,727	85,240	808,718	355,836
1943.....	.....	.....	7,153,974	2,074,652	.....	.....	7,153,974	2,074,652
1944.....	.....	.....	10,579,778	2,575,695	.....	.....	10,579,778	2,575,695
1945.....	.....	.....	7,358,545	1,607,264	.....	.....	7,358,545	1,607,264
1946.....	.....	.....	320,677	75,538	.....	.....	320,677	75,538

(a) Magnesium metal produced in 1918 at Shawinigan Falls, Quebec by Shawinigan Electro Metals Company Limited from imported magnesium chloride but data not available.
(b) Approximately 200,000 pounds produced at Trail from imported magnesium chloride; complete data not available.
(c) Powder.

Table 180.—Consumption of Magnesium Ingots in Canada, 1943-1946

	1943	1944	1945	1946
	Pounds	Pounds	Pounds	Pounds
In non-ferrous smelters.....	1,298,650	1,480,528	487,773	441,000
In white metal alloy foundries.....	16,821	55,496	37,740	142,445
In brass and bronze foundries.....	132,465	51,040	66,116	17,266
In aluminum products.....	89,523	34,930	45,452	15,061
Total accounted for.....	1,537,459	1,621,994	637,081	615,772

MANGANESE

All manganese properties in Canada have been inactive since 1943. The small Canadian production in the past came mainly from deposits in the Maritime Provinces. Known deposits of high-grade manganese in Canada are small and are almost exhausted. No commercial grade deposits have been found and future production appears to be unlikely unless sufficient manganese is disclosed during the operation of the iron deposits of Steep Rock Iron Mines, Limited, west of Port Arthur, Ontario, to warrant its recovery as a by-product. Consumption is steadily increasing, however, as adequate supplies of high quality ore can now be obtained from foreign deposits, the output from which was restricted during the war.

World production of manganese ore is estimated to be between five and six million tons annually, the leading producing countries being Russia, British India, Gold Coast, United States, Union of South Africa, Brazil, and Cuba. Prior to the last war, Russia was the source of nearly half the world production, the principal deposits being in the Republic of Georgia and Ukraine. During the last quarter of 1945 Russia was the largest individual shipper of manganese ore to the United States.

Price quotations in New York, December 1946, show manganese ore at 70 cents per long ton unit of contained Mn, basis 48 per cent. Chemical grades, coarse or fine, minimum 80 per cent MnO₂ were quoted at \$60 to \$65 per ton. Manganese metal, electrolytic, 99.9 per cent Mn had a nominal price of 32 cents per pound.

Table 181.—Production of Manganese Ore in Canada, 1937-1946

Year	Tons	Value	Year	Tons	Value
		\$			\$
1937.....	85	817	1942.....	435	8,932
1938.....	.....	.....	1943.....	48	985
1939.....	396	3,688	1944.....	.....	.....
1940.....	152	4,315	1945.....	.....	.....
1941.....	(x)	(x)	1946.....	.....	.....

(x) 7,500 pounds manganese metal produced at the mine from Nova Scotia manganese ore.

Table 182.—Imports of Manganese Ore into Canada, 1937-1946

Year	Tons	\$	Year	Tons	\$
1937.....	77,226	802,269	1942.....	57,389	860,248
1938.....	21,050	463,673	1943.....	51,234	1,445,252
1939.....	29,787	621,931	1944.....	85,795	2,370,109
1940.....	70,460	777,416	1945.....	198,277	4,571,592
1941.....	104,473	1,170,768	1946.....	144,023	2,484,707

Table 183.—Imports of Manganese Ore into Canada, by Principal Countries of Supply, 1944-1946

	1944	1945	1946
	Tons	Tons	Tons
From—Gold Coast.....	42,442	182,779	130,907
British India.....	33,832	11,927	.....
Chile.....	2,493	.....	.....
South Africa.....	.....	.....	345
United States.....	7,024	3,569	12,768
United Kingdom.....	4	2	3
Total imports.....	85,795	198,277	144,023

MERCURY

No mercury has been produced in Canada since the summer of 1944, all shipments in 1945 being from stock. All of the Canadian production has come from the Pinchi mine of the Consolidated Mining and Smelting Company of Canada, Limited, and from the Takla property of Bralorne Mines Limited, both of these mines being in the Omineca Mining Division, British Columbia. The Pinchi mine was the largest single producer of mercury in the western hemisphere.

In contrast with the shortages of most other metals mercury was in abundant world supply in 1946, and prices for the metal continued to decline appreciably. Chief contributing factor to this decline was the excess of supplies in Europe, the principal source of output, in relation to the demand. Other factors of importance were the discovery of large stockpiles of mercury in the American zone of Germany and in Japan. Operation of the Mercurio Europeo Cartel also had a depressing effect on the market. During the latter part of 1946 this Italo-Spanish combine appointed London and Scandinavian Metallurgical Company as the agent for the United States, and Elder, Smith and Company for the British Empire.

In the United States, the development for military use, of the small mercury cell of "tropical dry battery" accounted for a substantial increase in the consumption of mercury late in the war. Production of the cells for several types of military batteries and for hearing-aid use is under way. Work has been concentrated on the development of new designs and on more economical manufacture. The battery is not being made in Canada.

A comparatively recent development is the use of a mercury clutch for fire engine pumps, helicopters, for the electric motors of refrigerator equipment, washing machines, etc. A water repellent mercury fungicide is said to afford efficient protection against mildew and to destroy microbes that attack a large variety of articles, such as textiles, paints, wood, and leather. In Germany, a considerable amount of mercury was consumed in a small cathode cell for the electrolytic production of chlorine and caustic soda. This cell has been introduced with considerable advantage in a number of alkali-chlorine plants in the United States.

The average United States price quotation at the beginning of 1946 was \$105 a flask, but prices dropped to \$88 in December, the year's average being \$98.24, compared with nearly \$135.00 in 1945. Late in 1946 the price of £30, pegged by the British Government, was lowered to £25 per flask, but in private hands the price was £20. In January, 1947, the Mercurio Europeo Cartel was asking \$67.50 in bond New York or \$86.50 with the U.S. import duty of \$19.00 per flask.

Table 184.—Production of Mercury in Canada, 1938-1946

Year	Pounds	\$	Year	Pounds	\$
1938.....	760	760	1943.....	1,690,240	4,559,200
1939.....	436	1,226	1944.....	735,908	1,210,375
1940.....	153,830	369,317	1945.....		
1941.....	536,304	1,335,697	1946.....		
1942.....	1,035,914	2,943,807			

Table 185.—Production of Mercury in Canada, Consumption, Imports and Exports, 1939-1946

Year	Production in Canada	Consumption in Canada	Imports	Exports
	Pounds	Pounds	Pounds	Pounds
1939.....	436	89,617	109,232	.....
1940.....	153,830	75,643	78,597	108,000
1941.....	536,304	151,351	8,599	360,164
1942.....	1,035,196	185,118	1,971	692,753
1943.....	1,690,240	201,982	2,047	1,304,692
1944.....	735,908	130,515	35,428	362,670
1945.....		100,700	27,101	261,720
1946.....		102,320	152,719	57,005

Table 186.—Consumption of Mercury in Canada by Principal Uses, 1942-1946

Industries	1942	1943	1944	1945	1946
	Pounds	Pounds	Pounds	Pounds	Pounds
Pharmaceuticals and fine chemicals.....	78,362	79,786	24,307	20,652	26,183
Heavy chemicals.....	50,968	72,531	78,300	53,701	45,005
Electrical apparatus.....	42,313	30,065	4,652	(*) 4,500	12,192
Gold mines.....	(*) 10,000	(*) 10,000	(*) 10,000	(*) 10,000	6,450
Miscellaneous.....	3,475	9,600	13,256	11,847	12,490
Total.....	185,118	201,982	130,515	100,700	102,320

(*) Estimated.

MOLYBDENUM

Molybdenite Corporation of Canada, Limited, the only Canadian producer of molybdenum ore in 1946, has maintained a continuous output from the La Corne mine in La Corne township, Quebec, since July, 1945, when it took over the property from Wartime Metals Corporation. As there are no plants in Canada to convert the concentrate into addition agents, there is no sale for the concentrate in Canada. Sales to the United States are barred because of tariffs and the large productive capacity in that country, consequently all shipments go to Europe. The La Corne ore contains bismuth which until recently was a disadvantage as it remained in the concentrate and a concentrate containing more than 0.5 per cent bismuth is not acceptable. During 1946, however, a process was developed by the Bureau of Mines, Ottawa, which not only freed the concentrate of this metal, but also raised the molybdenum content of the concentrate and this content is probably higher than that of any other concentrate produced in the world. The bismuth is saved as a by-product, for which purpose a unit was installed.

Molybdenite, the chief ore of molybdenum, is a soft and shiny steel-blue-grey sulphide containing 60 per cent of the metal. In eastern Canada it is usually found in pegmatite dykes or along the contacts of limestone and gneiss, commonly associated with greenish grey pyroxenites in which other metallic minerals such as pyrite and pyrrhotite often occur. In northern and western Ontario, Quebec, and in British Columbia, molybdenite usually occurs in quartz or in quartz veins, along the contacts of, or intruded into granites, or diorites. It generally occurs in the form

of soft, pliable flakes or leaves, but it is sometimes semi-amorphous, filling cracks and smearing the rock surface. It can be readily distinguished in the field by the olive-grey-green smear it leaves when rubbed on glazed white porcelain or enamel. Graphite, for which it is often mistaken leaves a grey-black smear.

Molybdenite concentrate is converted into an addition agent that is introduced into steel as molybdenum trioxide, ferromolybdenum, or to a small extent as calcium molybdate. The oxide is usually moulded into briquettes which weight 5 pounds each, and contain $2\frac{1}{2}$ pounds of molybdenum.

Molybdenum has a widening range of uses, but by far the greater part of the output is used in steel to intensify the effect of other alloying metals, particularly nickel, chromium, and vanadium. These steels usually contain from 0.15 to 0.4 per cent molybdenum, but in some instances the percentage is considerably higher. For high-speed tool-steels as much as 9 per cent is added.

Molybdenum alloys are used widely for the hard-wearing and other important parts of aeroplanes. They are used in the automobile industry, in high-grade structural die and stainless steels; and to some extent in high-speed tool-steels. Molybdenum is used in cast iron and in permanent magnets. Much molybdenum wire and sheet is used in the radio industry; and new alloys suitable for electrical resistance and contacts and for heating elements contain molybdenum.

The chemical used continue to increase, and the salts are used in pigments, in vitreous enamels for coating steels and sheet iron, in welding rod coatings, and for analytical work.

United States specifications for concentrate dried at 212°F . are: MoS_2 , minimum 85 per cent; copper, maximum 0.6 per cent; iron, maximum 3.0 per cent; combined phosphorus antimony and tin, maxima 0.2 per cent.

There is no Canadian market for concentrates as there are no conversion plants, and since July, 1945 the only shipments have been to Europe at a price of $42\frac{1}{2}$ cents per pound.

The price per pound of contained molybdenum, f.o.b. Toronto, in Canadian funds, for the following imported compounds is approximately: calcium molybdate (42 per cent Mo), 90 cents; ferromolybdenum (60 per cent Mo), \$1.13 and molybdic oxide (52 per cent Mo), 90 cents. Calcium molybdate is sold in bags of about $12\frac{1}{2}$ pounds containing exactly 5 pounds of molybdenum.

Table 187.—Molybdenite Mining in Canada, 1944-1946

	1944	1945	1946
Active firms.....No.	4	3	(*)
Employees—On salary.....No.	31	21	
Wage-earners.....No.	148	98	
Total.....No.	179	119	
Salaries and wages—Salaries.....\$	62,954	34,295	
Wages.....\$	332,512	189,729	
Total.....\$	395,466	224,024	
Gross value of production.....\$	1,079,698	411,663	295,640
Fuel and electricity used.....\$	54,614	34,991	
Process and supplies used.....\$	103,774	35,736	100,594
Freight and treatment charges.....\$	72,681	42,613	
Net value of production.....\$	848,629	113,340	195,046

(*) Only one firm in 1946.

Table 188.—Production of Molybdenite in Canada, 1937-1946

Year	Ores milled	Ores and concentrates shipped or used		Total MoS ₂ content of shipments
	Tons	Tons	Value (a)	Pounds
			\$	
1937.....	5,307	8.25	8,147	(b)
1938.....	(b)	6.5	4,500	(b)
1939.....	1,492	1.3	816	(b)
1940.....	3,936	11.1	10,280	(b)
1941.....	28,100	98.3	88,470	173,991
1942.....	39,708	113.7	134,963	158,780
1943.....	120,576	392.4	549,515	653,200
1944.....	187,130	1,064.0	1,079,698	1,870,132
1945.....	80,575	489.1	411,663	839,419
1946.....	84,280	318.2	295,640	676,844

(a) Value as given by the operators 1937 to 1939; 1940 to 1945 value estimated using market or Government prices.

(b) Not known.

PITCHBLEND

Pitchblende, the ore of radium and uranium, is mined in Canada only in the Great Bear district of the Northwest Territories. Prospecting reports indicate that radioactive minerals have been found at Contact Lake, Northwest Territories, Lake Athabaska, Saskatchewan and Haliburton county, Ontario.

Statistics on pitchblende ores and products have not been available since 1940.

Table 189.—Canadian Refinery Production of Pitchblende Products

Year	\$	Year	\$
1933 (a).....	247,900	1938.....	1,045,458
1934.....	159,400	1939.....	1,121,553
1935.....	413,700	1940.....	410,176
1936.....	605,500	1941-1946.....	(b)
1937.....	876,540		

(a) First production.

(b) Not available.

SELENIUM

Selenium is fairly widely distributed, but in no case does it occur in quantity large enough to be mined for itself alone. It is not widely used in industry though new uses are being steadily developed. Canada and the United States are the principal sources of supply.

In Canada selenium is recovered during the refining of blister copper produced in Manitoba, Ontario, and Quebec, and was first produced in the Dominion in 1931 in the copper refinery of International Nickel Company of Canada at Copper Cliff, Ontario. The only other producer is Canadian Copper Refiners, Limited, with refinery at Montreal East, Quebec, where production was commenced in November, 1934. The Copper Cliff product is derived from the treatment of the copper-nickel ore of the Sudbury district, and at Montreal East the selenium by-product is obtained from the treatment of the gold-copper ore of Noranda, Quebec, and the gold-copper zinc ore of the Flin-Flon mine on the boundary line between Manitoba and Saskatchewan. The plant at Montreal East is the largest producer of selenium in the world.

A plant for the manufacture of selenium compounds was erected in 1944 at Montreal East by Canadian Copper Refiners, Limited. The compounds being made in addition to refined selenium are double distilled selenium, C.P. selenium, commercial selenium dioxide, sodium selenite, and sodium selenate.

Selenium is marketed as a black to steel-grey amorphous powder, but cakes and sticks are also obtainable. Among the other products are ferroselenium, sodium selenite, selenious acid, and selenium dioxide. The most important outlets for selenium prior to the war were in glass, rubber,

and paint industries. The greatest single development in the utilization of selenium since 1939 has been in its use in electrical rectifiers that played such an important role in connection with radar and with generators for aeroplanes and army field equipment. Considerable quantities are being used as accelerators in the vulcanization of synthetic rubber. Selenium is used to develop free machining qualities in stainless metal and as an ingredient of austenitic chromium steels. For the latter purpose it is supplied in bars of selenium-bearing stainless metal.

Selenium is useful in producing good ruby glass; is a quality-improver in lubricating oil; and is a potent ingredient of anti-fouling paints for ship bottoms.

Since 1938, the nominal price for selenium, black powdered, 99.5 per cent pure, at New York has been \$1.75 per pound.

Table 190.—Production of Selenium in Canada, 1937-1946

Year	Pounds	\$	Year	Pounds	\$
1937.....	397,227	687,203	1942.....	495,369	951,108
1938.....	358,929	622,742	1943.....	374,013	654,523
1939.....	150,771	266,714	1944.....	298,592	537,466
1940.....	179,860	343,533	1945.....	379,187	728,039
1941.....	406,930	777,236	1946.....	521,867	949,798

TANTALUM-COLUMBIUM

Canada produces no tantalite or columbite and according to the Bureau of Mines, Ottawa, the known Canadian occurrences of these minerals are scarce and of undetermined economic interest. The minerals tantalite and columbite are the tantalate and columbate, respectively, of iron and manganese, with the general formula $(\text{Fe}, \text{Mn})(\text{Ta}, \text{Cb})_2\text{O}_6$. They grade one into the other according as whether tantalum or columbium predominates. Both tantalite and columbite were of increasing importance in the war effort and tantalite was placed in the group of "strategic" minerals having the highest priority rating. The occurrence of all tantalum-columbian minerals is restricted to granite-pegmatites, or to residual or alluvial deposits derived from such rock. The chief world sources of tantalite proper have been Western Australia, Belgian Congo, Southern Rhodesia, Uganda, United States and Brazil. The supply of columbite has come mainly from Nigeria, Belgian Congo, Southwest Africa, Argentina and Brazil. The annual world output of tantalite-columbite is small and complete data on same are not available at present. Tantalum metal is highly resistant to corrosion and possesses remarkable conductivity for heat; one of its important uses is in equipment, such as stills, condensers, tubes and heaters in chemical plants and laboratories; it is being used to an increasing extent in the field of electronics. Columbium is employed chiefly as an alloying component in various special-purpose steels, and also in copper, aluminum and other metals.

There are no users of tantalum or columbium ores in Canada, the chief world market being in the United States. The principal American consumer-buyer of tantalite is Fansteel Metallurgical Corporation, North Chicago, Illinois, and of columbite, Electro-Metallurgical Company, 30 East 42nd Street, New York City. These companies have been pioneers in the fields of industrial applications for tantalum and columbium metals, alloys, and products, respectively, and are the leading companies engaged in treating the ores.

United States quotations for tantalum ore, December, 1946, were, per pound Ta_2O_5 , \$3, to \$3.50 for 60 per cent concentrate, the price depending on the source. Columbium metal, per kilo, base prices: rod \$560; sheet \$500. Tantalum metal, per kilo, base prices, \$160.60 for C.P. rod; sheet \$143; discounts on volume business.

TELLURIUM

Tellurium was first produced in Canada in 1934 at Copper Cliff, Ontario by International Nickel Company of Canada, Limited. The only other producer, Canadian Copper Refiners, Limited, started production in 1935 at its plant in Montreal East, Quebec. The former plant

treats the slime from the refining of the blister copper produced by International Nickel Company at Copper Cliff; and the latter, the slime from the refining of anode copper of Noranda Mines, Limited, Noranda, Quebec and the blister copper of Hudson Bay Mining and Smelting Company, Flin Flon, Manitoba.

Very finely powdered tellurium is used as rubber-compounding material, this being the most important use of tellurium at present. Small quantities are used as a colouring agent in the ceramic industry. When alloyed with lead the tensile strength and toughness of the lead are increased greatly. Lead alloys containing from 0.1 to 0.5 per cent tellurium have been in use for some time in applications requiring resistance to vibration and corrosion. Tellurium is used for improving the machining qualities of certain steel.

Table 191.—Production of Tellurium in Canada, 1937-1946

Year	Pounds	\$	Year	Pounds	\$
1937.....	41,490	71,777	1942.....	11,084	17,735
1938.....	48,237	82,967	1943.....	8,600	15,050
1939.....	2,940	4,769	1944.....	10,661	18,657
1940.....	3,491	5,607	1945.....	484	929
1941.....	11,453	18,394	1946.....	15,848	24,405

Table 192.—Consumption of Tellurium Metal in Steel and White Metal Foundries, 1940-1946

Year	Steel Foundries	White Metal Foundries
	Pounds	Pounds
1940.....	400	629
1941.....	185	492
1942.....	50	612
1943.....	135	453
1944.....	398	531
1945.....	.....	308
1946.....	.....	1,372

THALLIUM

There has been no production of thallium since 1944 in Canada. The first commercial production of this element in this country was in 1944 when 128 pounds valued at \$1,690 was contained in residues produced by Hudson Bay Mining and Smelting Company, Limited at the Flin Flon smelter, Manitoba. These residues were exported for treatment in foreign plants. Thallium metal was quoted in the United States at \$17.50 per pound nominal, December 1946. The element has an atomic weight of 204 and has been used in alloys and glass-making.

Thallium sulphate is used as a rodenticide. Lead-thallium alloys are said to be very highly resistant to corrosion and use in bearing metals has been proposed. Patents on copper-thallium bearing metals were issued in 1945 in the United States.

TIN

Tin ore, of which cassiterite (SnO_2) is the most important mineral, has so far not been found in Canada in deposits of economic importance. In many of the placer creeks of Yukon, especially the Mayo district, some crystalline cassiterite is found. Similar small occurrences have been reported from the gold-bearing placers of British Columbia. Considerable prospecting was done during the war, and although no deposits of economic value were disclosed, the geological conditions in these areas warrant further investigation.

A very small cassiterite content is found in the lead-zinc-silver ore of the Sullivan mine of The Consolidated Mining and Smelting Company of Canada, Limited, at Kimberley, British

Columbia. In view of the acute shortage of tin which developed in the early stages of the war, consideration was given to its recovery from this source. On March 1, 1941, a concentration plant treating the tailings from the zinc flotation commenced operations, and in April 1942, the commercial production of refined tin by electric smelting was commenced.

The recovery of tin from the Sullivan ore constitutes a particularly interesting metallurgical operation. The tailings from the zinc flotation cells, amounting to around 6,000 tons per day, contain about 1.2 pounds of tin per ton. The first operation consists in removing the iron sulphides by flotation. The tailings, containing the tin, are then treated in a series of gravity concentrations which finally result in a concentrate carrying from 63 to 68 per cent tin. This product is smelted in a three-phase 400 kilowatt electric furnace of 5 tons capacity to yield high grade refined tin. Three months operation of the smelter is sufficient to handle the year's accumulation of tin concentrate.

Tin is used chiefly in the manufacture of tin plate, mainly for use in making tin cans and containers of all kinds. To conserve supplies, the use of tin in solders and in babbitt metal has been restricted in recent years and there has been wide use of low-tin or virtually tin free solders. Smaller quantities of tin are used in foil, terneplate, type metal, bronze and galvanizing.

The price of tin in New York was fixed at 52 cents a pound in August 1941, and this price was changed in 1946; and the quotation at end of December, 1946, was 69 cents per pound.

Table 193.—Production of New Tin in Canada, Domestic Consumption, Imports and Exports, 1937-1946

Year	Production in Canada	Domestic consumption	Exports	Imports	Stocks at end of period
(Tons of 2,000 pounds)					
1937.....		2,503		2,939	Not available
1938.....		2,305		2,637	
1939.....		2,787		2,913	
1940.....		3,868		5,918	
1941.....	32	6,436		8,719	2,655
1942.....	619	3,571		3,601	5,120
1943.....	390	2,865		1,311	3,920
1944.....	253	3,383		1,341	2,622
1945.....	425	4,108		3,597	2,565
1946.....	437	4,152		3,514	2,430

Table 194.—Production of New Tin in Canada, 1941-1946

Year	Pounds	\$	Year	Pounds	\$
1941(*).....	64,744	33,667	1944.....	516,626	299,643
1942.....	1,237,863	643,689	1945.....	849,983	492,990
1943.....	776,937	450,623	1946.....	874,186	507,028

(*) First commercial production.

Table 195.—Consumption of Tin (Ingots or Bars) in Canada, by Principal Industries, 1942-1946

	1942	1943	1944	1945	1946
(Tons of 2,000 pounds)					
In white metal foundries (solder, babbitt, etc.).....	1,530	1,264	1,200	1,320	1,321
In steel plants (chiefly for tinplate).....	1,428	1,148	1,517	2,010	2,513
In brass and bronze foundries.....	247	200	406	532	208
In other industries.....	366	253	260	246	105
Total accounted for.....	3,571	2,865	3,383	4,108	4,152

TITANIUM

Titanium-bearing ores found in Canada are of two classes. Ilmenite, containing 30 to 40 per cent TiO_2 occurs in three localities in Quebec. In the St. Urbain district on the St. Lawrence, 60 miles below Quebec City, a part of the ore contains free TiO_2 as rutile mixed with the ilmenite, and its content of TiO_2 reaches 50 per cent and more. The other two deposits are at Ivry, 65 miles north of Montreal, and Allard Lake, 12 miles north of Havre St. Pierre on the Gulf of St. Lawrence.

Titaniferous magnetite, the second class of titanium-bearing ore, is composed of the two minerals, ilmenite and magnetite, mixed intimately in varying proportions, with a content of 5 per cent or more TiO_2 . This ore is more abundant and occurs more widely in Canada than does ilmenite. It is not used in this country at present as a source of titanium. Large deposits occur at Mine Centre in North-western Ontario; in the southern part of Hastings county north of Belleville, Ontario; at Desgrosbois 65 miles north of Montreal; and on the Saguenay River near Arvida, Quebec.

Deposits of magnetic beach sands containing titanium occur at a number of places on the north shore of the Gulf of St. Lawrence. An interesting bed of such sand that has been consolidated into solid ore occurs at Burnis, Alberta, just east of the Crownsnest Pass.

Small shipments of ilmenite were made formerly from the Ivry deposit, but during recent years the only production has been from the St. Urbain deposits. The largest potential source of ilmenite is the recently discovered Allard Lake ilmenite deposits from which only experimental shipments have been made. These deposits are very large, though their full extent is not yet known. The ore as exposed in hills and ridges contains several million tons above ground level. It averages about 35 per cent TiO_2 , 37 per cent iron, and 3 per cent silica. Its convenient location near ocean port will permit large-scale development when there are sufficient market outlets.

The two principal uses for ilmenite are as an alloying agent in steels, and as a pigment. At Niagara Falls, N.Y., ferro-titanium and ferro-carbon-titanium alloys are made from it for use in improving the quality of steel. By far the larger part of the ilmenite consumed in the world, however, is used to make the pigment, titanium white. New uses for this pigment are being found constantly and the demand continues to increase rapidly. There were reports during the year of a Canadian plant to make titanium white, but no definite action was taken.

To the present the substantial amounts of titanium white used in Canada have been imported from the United States. A part of the ore for the United States plants is produced in the southern states. Normally much of the ore for these plants was Travancore sand from India, which is particularly well suited to the process at present in use. When this became unobtainable during the war the McIntyre titaniferous magnetite deposit in New York state was opened and operated on a large scale, but this property has been closed.

Prices f.o.b. Atlantic ports were: Ilmenite, 60% TiO_2 —January \$28-\$30; 57-60% TiO_2 —June \$24-\$26, November \$22-\$24. Rutile, 94% TiO_2 —nominally 8-10 cents per pound (probably averaged around 6 cents).

Table 196.—Production of Titanium Ore in Canada(*), 1937-1946

Year	Short tons	\$	Year	Short tons	\$
1937.....	4,229	26,432	1942.....	10,031	50,906
1938.....	207	1,449	1943.....	69,437	308,290
1939.....	3,694	21,267	1944.....	33,973	165,195
1940.....	4,535	24,510	1945.....	14,147	67,575
1941.....	12,651	49,110	1946.....	1,406	7,735

(*) All from Quebec.

Table 197.—Imports into Canada of "Antimony Oxide, Titanium Oxide and White Pigments Containing not Less than 14 Per Cent by Weight of Titanium"

Year	From the United Kingdom		From the United States		Total Imports	
	lb.	\$	lb.	\$	lb.	\$
1937.....	2,220,330	262,660	3,410,121	264,085	5,630,451	4,710,481
1938.....	1,599,659	199,814	4,110,672	312,384	526,745	512,219
1939.....	1,689,329	227,805	7,302,923	574,193	9,093,693	803,198
1940.....	477,912	65,747	8,292,103	717,210	8,700,015	782,957
1941.....	418,962	64,302	12,801,017	1,257,065	13,219,979	1,321,367
1942.....	115,360	27,697	14,527,348	1,395,345	14,642,708	1,423,042
1943.....	33,700	8,094	16,855,800	1,525,368	16,889,500	1,533,462
1944.....			20,174,795	1,871,434	20,174,795	1,871,434
1945.....	79,440	16,752	21,279,636	2,029,137	21,359,076	2,045,889
1946.....	76,800	11,678	23,854,188	2,182,007	23,930,988	2,193,685

Table 198.—Consumption of Titanium Oxide in Canada, by Industries, 1945 and 1946

Industry	1945		1946	
	Pounds	Cost at works	Pounds	Cost at works
Paints—		\$		\$
Extended titanium dioxide pigments.....	12,120,296	901,144	12,884,744	912,340
Titanium dioxide.....	6,306,213	1,192,404	6,832,585	1,160,696
Polishes and dressings.....	242,834	33,185	280,450	36,858
Pulp and paper.....	770,000	141,028	728,000	120,842
Total accounted for.....	19,439,343	2,267,761	20,725,779	2,230,736

Table 199.—Consumption of Ferrotitanium in Manufacture of Steel in Canada, 1939-1946

Year	Tons	\$	Year	Tons	\$
1939.....	118	23,498	1943.....	614	118,416
1940.....	118	24,233	1944.....	786	149,527
1941.....	181	52,128	1945.....	656	123,975
1942.....	439	66,555	1946.....	416	73,485

TUNGSTEN

Stimulated by a critical shortage during the war up to the fall of 1943, Canada produced tungsten concentrates from a number of deposits throughout the Dominion, but production ceased in November, 1943, owing to excess of supplies. Stocks on hand at mines have all been shipped. Late in 1946 the Emerald mine near Salmo in southern British Columbia was taken over by Canadian Explorations Limited, and production of concentrate in the 300-ton mill was expected to start late in the spring of 1947. Canada's requirements can be adequately supplied by this mine.

Wolframite, $(\text{Fe}, \text{Mn}) \text{WO}_4$, is the principal ore of tungsten, the next in importance being scheelite (CaWO_4) , a calcium tungstate. The former is a dark brown to black, heavy mineral, which contains 76.4 per cent WO_3 (tungstic oxide) when pure, and is not common in Canada. Scheelite, the chief Canadian ore of tungsten, is a heavy, fairly soft, usually buff, but sometimes white mineral with a dull lustre, which contains 80.6 per cent WO_3 when pure. It is commonly associated with quartz and frequently occurs in gold-bearing veins and in certain contact metamorphic deposits. It can be detected readily in the dark by its brilliant, pale bluish-white fluorescence under ultra-violet light and purple filter.

As an alloying metal in steel, tungsten (usually as ferrotungsten, but sometimes as calcium tungstate or scheelite concentrate) is used essentially to impart hardness and toughness, which

are maintained even when the steel is heated to a high temperature. Almost 80 per cent of the consumption of tungsten in the United States is used for the production of high-speed steels for cutting tools, in which the tungsten content is 15 to 20 per cent. Alloy steels containing tungsten have been used extensively in making armour plate, armour piercing projectiles, and other military equipment. The use of tungsten in hard facing compounds is increasing. Fused powdered tungsten is used for the diamond set bits for rock drilling. Minor amounts of tungsten are used in steels for dies, valves, and valve seats for internal combustion engines, and for permanent magnets. Stellite, the best known non-ferrous alloy, contains 10 to 15 per cent tungsten with higher percentages of chromium and cobalt. Tungsten carbide is widely used as an extra hard cutting tool. Pure tungsten is used in lamp filaments, in radio tubes, contact points, etc. In the United States there has been an increase in the consumption of tungsten as metal powder, in chemicals, and in high porosity alloys in gas turbines and other high temperature uses.

Until production ceased late in 1943, all sales of Canadian concentrate were made through the Metals Controller, Ottawa, at a price of \$26.50 a short unit (20 pounds) of WO₃ for scheelite concentrate containing 70 per cent WO₃ (within specifications), delivered at Welland, Ontario. Since then prices have fluctuated downward, but for the past year there have been no Canadian-made concentrates for sale. Foreign ores entering the United States in 1946 were \$21 to \$25 per short ton unit (20 pounds) of contained WO₃, duty paid. Domestic ore was \$25 in car lots delivered to plants. Ferrotungsten of 75 to 80 per cent tungsten was \$1.90 per pound of contained tungsten.

Table 200.—Production (Commercial Shipments) of Crude Tungsten Concentrates in Canada, 1939-1946

Year	Pounds	\$	Average per cent WO ₃
1939.....	8,825	4,917	(a)
1940.....	12,002	7,303	70-75
1941.....	(b) 82,846	38,712	51-1
1942.....	520,981	406,275	61-8
1943.....	1,508,621	1,083,538	54-2
1944.....	886,745	245,780	31-9
1945.....	1,153	1,045	68-7
1946.....			

(a) Not recorded.
(b) Includes export of considerable low-grade material to United States.

Table 201.—Consumption of Ferrötungsten in Steel Furnaces in Canada, 1938-1946

Year	Short tons	Cost at works	Year	Short tons	Cost at works
		\$			\$
1938.....	34	69,806	1943.....	550	1,721,966
1939.....	106	173,250	1944.....	86	287,116
1940.....	376	829,859	1945.....	138	455,317
1941.....	482	1,003,314	1946.....	260	402,174
1942.....	203	524,007			

VANADIUM

Some of the magnetites of the Rainy River district in Ontario are known to contain relatively small quantities of vanadium and some research has been conducted as to its economic recovery. There is no production of either the metal or its ores in Canada at the present time.

The principal occurrences of vanadium are in Arizona, Colorado and Utah in the United States; Minasragra in Peru; Broken Hill in Northern Rhodesia; and Grootfontein district in South West Africa.

The metal is employed chiefly in the manufacture of alloy steels and irons. It is also used in the form of ammonia meta-vanadate as a catalyst in the manufacture of sulphuric acid and in the non-ferrous, glass, ceramic and color industries.

The United States Bureau of Mines reports that vanadium has been and is now being obtained by some countries from other than vanadium ores, including petroleum, bauxite, phosphate rock and titaniferous magnetites; the ever-increasing demand for vanadium directs attention to all possible vanadium sources, as well as to efforts to extend known deposits. In the United States the principal ores are roscoelite and carnotite in sandstones, disseminated or in spots, bunches, lenses and seams.

Data relating to possible imports of vanadium ores or vanadium compounds or alloys are not shown separately in Canadian trade reports. In 1944 there were 257 tons of ferrovanadium valued at \$188,661 consumed in Canada in the manufacture of steel.

Vanadium ore was quoted December, 1946; 27½ cents per pound contained V_2O_5 , f.o.b. shipping point, by "E & M J Metal and Mineral Markets", New York.

CHAPTER SIX -

THE NON-FERROUS SMELTING AND REFINING INDUSTRY IN CANADA

The Non-ferrous Smelting and Refining Industry, as defined for statistical purposes, includes only those firms engaged primarily in the smelting of non-ferrous ores or concentrates and the refining of metals recovered therefrom.

The net value added by the industry in the processing of crude or semi-crude material during 1946 totalled \$69,565,922 compared with \$89,898,878 in 1945. Refined products included gold, silver, nickel, copper, lead, zinc, aluminum, tin, magnesium, calcium, antimony, bismuth, cobalt, cadmium, selenium, tellurium and sulphur; other end products of individual plants or companies were copper-nickel matte, cobalt salts, cobalt oxide, nickel oxide, nickel salts, bauxite concentrates, arsenious oxide, sulphuric acid, platinum metals residues, zinc oxide, zinc dust, and blister and anode copper. Statistics relating to the production of pitchblende products at Port Hope, Ontario, are not included in this report.

It should be noted, in a study of these data, that firms operating both mines and smelters may vary from year to year the nominal values of crude ores, etc., shipped from their mines to their own smelters, with the result that in some years the mining industry proper is favoured economically at the expense of the non-ferrous smelting and refining industry and vice versa. The total annual net value of commodity production for the Dominion as a whole is, however, not affected by these arbitrary internal evaluations.

Fuels and electricity used by the industry in 1946 totalled \$19,855,976 compared with \$26,837,162 in 1945. The value of chemicals and other process supplies consumed during the year amounted to \$16,000,964 as against \$19,735,628 in the preceding year.

Employees during 1946 totalled 14,546 compared with 16,821 in 1945, and salaries and wages paid amounted to \$30,648,361 compared with \$33,853,120 in the previous year.

ALUMINUM COMPANY OF CANADA LTD.—Production of aluminum is entirely by this company, which has its alumina plant at Arvida and reduction plants at Arvida, Ile Maligne, Shawinigan Falls, La Tuque and Beauharnois, all in the province of Quebec. These reduction plants have a total rated capacity of about 550,000 tons of aluminum a year or over 20 per cent of the estimated productive capacity of the world.

Fabricating plants are located at Kingston, Toronto and Etobicoke in Ontario and at Shawinigan Falls in Quebec. These plants consume only a small part of the company's production and Aluminum Company of Canada is primarily a producer and exporter of aluminum ingot.

Developments in 1946 consisted mainly in adjusting production to meet the lesser peacetime demand. The reduction plants at Shawinigan Falls, La Tuque and Beauharnois were closed and operations were concentrated at Arvida and Ile Maligne.

The principal imported raw materials used in the Canadian aluminum industry are bauxite from British Guinea, coal and coke from the United States, fluorspar from Newfoundland, and cryolite from Greenland and the United States.

NORANDA MINES LTD.—(From the company's annual report)—During the period from January 1 to November 21, 1946 the smelter treated 752,518 tons of ore, concentrate, slag and scrap brass (shell cases), from which 74,065,031 pounds of anodes were produced. Included in the total material smelted were 250,226 tons of ore, concentrate and scrap which was smelted for other companies on a toll basis. After deducting the copper, gold and silver which was recovered from secondary products such as slag and scrap brass, the estimated recovery of new metals was 70,378,097 pounds of fine copper, 198,660 ounces of gold and 823,171 ounces of silver. The estimated recovery from Horne Mine ore and concentrate was 27,525,548 pounds of copper, 155,197 ounces of gold and 317,997 ounces of silver.

CANADIAN COPPER REFINERS LTD.—Copper production during the year totalled 78,000 tons compared with an operating capacity of 112,000 tons. "Noranda" Brand Copper Sulphate

was well established in the Canadian market in 1946 and an additional product, tribasic copper sulphate, will be produced in 1947. The demand for selenium and selenium compounds continued to improve.

INTERNATIONAL NICKEL COMPANY OF CANADA, LTD. (From the company's annual report)—Mining and smelting operations were about 50 per cent of capacity during the first half-year. Beginning in September they were progressively stepped up and by the year-end the rate of production was 75 per cent of the maximum war-time figure.

Construction at the Copper Cliff smelter, referred to in last year's Report, has been delayed by lack of materials. This situation is improving and it is expected that construction will be completed in 1947. The plant will furnish a new product, Nickel Oxide Sinter, for use in the manufacture of steels, and will also furnish intermediate sintered products for our nickel refineries.

FALCONBRIDGE NICKEL MINES LTD. (From the company's annual report)—Smelter production was limited to the output of the smaller blast furnace from January 9th to December 18th with the larger furnace operating alone before and after that period. Both the concentrator and smelter operated over 99 per cent of their possible working time. During the year considerable experimental work was carried on in the plants which, combined with changes in the furnace operations, affected metallurgical recovery to some degree.

Total ore treated.....	486,516 tons
Matte produced.....	12,780 tons

DELORO SMELTING AND REFINING CO. LTD.—The cobalt refinery at Deloro, the only one in Canada, treated cobalt residues, a by-product from Northern Rhodesian copper mines, for the British Government during the war. These residues are much higher grade than the Canadian material and are comparatively simple to treat, and were the chief source of cobalt for the United Kingdom. No cobalt has been produced at Deloro from Canadian concentrates since the summer of 1940. Large stocks of Canadian ore, held mainly for the United States Government, remain untreated at Deloro. The company operates its silver furnaces only when the accumulation of silver-cobalt ores is enough to make the run worthwhile. Most of the refined white arsenic (As_2O_3) and arsenical insecticides made in Canada are produced by Deloro Smelting and Refining Co. which obtains raw material from the O'Brien Mine in western Quebec and from the silver-cobalt arsenic mines of the Cobalt area.

DOMINION MAGNESIUM LTD.—This firm was the only Canadian producer of magnesium during the war. Production temporarily ceased when the stockpile of metal became large enough to meet the current demands of the market. Equipment previously used for magnesium recovery is now used to produce metallic calcium. Calcium is being used by the research project on nuclear fission.

HUDSON BAY MINING AND SMELTING CO. LTD. (From the company's annual report)—The copper smelter operated satisfactorily during the year, and all available material was smelted. The tonnage of pay charge was slightly higher than in the previous year and amounted to 434,194 tons. The tonnage and average assay values of Hudson Bay concentrates and ores smelted, and the tonnage of custom concentrates treated, were as follows:

Tons H.B. concentrates and ores	Assay values per ton			Tons custom concentrates
	Au-oz.	Ag-oz.	Cu. %	
387,477	0.336	4.54	11.11	45,565

After allowing for metals due on account of custom concentrates, the company shipped for its own account the following: Gold, 143,282 ounces; silver, 1,839,426 ounces; copper, 79,989,315 pounds; selenium, 121,729 pounds.

The tonnage of zinc concentrates treated during the year and the average zinc assay per ton of concentrates treated were both higher than in 1945. The tonnage of high-quality four-nines-plus grade zinc produced was the largest for any year.

The tonnage and assay values of the zinc concentrates treated were:

Tons treated	Assays			
147,189	Au-oz. 0.044	Ag-oz. 1.24	Cu.% 0.55	Zn% 46.0

from which 102,656,828 pounds of slab zinc were produced.

The cadmium plant treated precipitates from the zinc purification plant and produced a total of 166,333 pounds of metallic cadmium, having an average purity of 99.9887 per cent. Production and purity were both higher than for the preceding year.

CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA, LTD. (From the company's annual report)—Refined lead tonnage at 165,744 compares with 163,142 in 1945. Refined zinc tonnage was 134,393 and compares with 134,873 in the previous year. Refined silver production was substantially higher at 6,004,825 ounces and compares with 5,125,971 in 1945. There was a pronounced improvement in metal recoveries.

Conduct of our metallurgical operations was generally satisfactory. Zinc plant performance was unchanged from that of recent years. Our Lead Smelter operation was normal and many advances were made in development studies, which will lead to technological improvements in future years.

While there were some increases in tonnages of customs ores, the totals were relatively small. Increased tonnages are indicated for 1947.

Table 202.—Principal Statistics of the Non-Ferrous Metallurgical Industry in Canada, 1944-1946

	1944 (b)	1945 (b)	1946 (b)
Number of companies.....	9	9	9
Number of plants.....	16	17	15
Number of administrative and office employees.....	3,371	2,749	2,238
Salaries..... \$	7,816,181	6,812,501	6,277,577
Number of workmen.....	20,556	14,022	12,308
Wages..... \$	36,720,810	27,040,619	24,370,784
Value of plant products (gross) (a)..... \$	474,206,801	355,676,526	304,718,524
Estimated cost of ores, concentrates, etc., treated..... \$	281,266,002	219,204,858	196,864,066
Cost of fuel and purchased electricity..... \$	36,907,623	26,837,162	22,287,572
Process supplies (other than ores, fuel, etc.)..... \$	32,730,138	19,735,628	16,000,964
Value added by smelting (net) (c)..... \$	123,303,038	89,898,878	69,565,922

(a) The gross value of production should not be interpreted as the ultimate sale value of finished metal only, as it represents the combined values of all industry (smelting, refining, etc.) and products (blister, copper matte, etc.) and in this sense represents a duplication in values.

(b) Data in this report do not include those relating to Eldorado Mining and Refining Ltd. which mines and refines pitchblende products.

(c) See preceding text.

Table 203.—Number of Workmen, by Months, 1945 and 1946 (Administrative and Office Employees not Included)

Month	1945		1946	
	Male	Female	Male	Female
January.....	15,070	954	10,780	88
February.....	14,796	947	11,210	75
March.....	14,955	931	11,434	71
April.....	14,853	922	11,709	69
May.....	14,423	882	12,240	70
June.....	13,994	857	12,591	58
July.....	13,448	823	12,746	59
August.....	12,819	762	12,599	60
September.....	11,983	626	12,478	60
October.....	11,620	591	12,648	64
November.....	10,854	473	13,160	66
December.....	10,682	137	13,211	65
Average.....	13,281	741	12,239	69

Table 204.—Non-Ferrous Smelters and Refineries in Canada

ALUMINUM REDUCTION WORKS

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
Quebec				
Aluminum Company of Canada, Ltd.	Arvida.....	Smelting plant: The concentrated ore is reduced to metallic aluminum by the Hall-Héroult method. Hall-type electric furnaces with carbon linings and Soderberg pots are used for smelting, and brick-lined furnaces are used for blending and alloying.	Tons 70,000 (27,000/M)	Aluminum ingots (including alloys)
		Ore plant: Bauxite (aluminum hydrate with impurities) from mines in British Guiana is concentrated by the Bayer process. Operations include digestion with caustic soda; filtration; precipitation and roasting.	1,050,000	Alumina
		Carbon plant: Special petroleum or pitch coke is crushed, ground, calcined, mixed with coal-tar pitch; then formed into blocks and baked in electric furnaces.		
		Cryolite plant: Cryolite from mines in Greenland is crushed, ground and then purified by mechanical and magnetic treatment.		
Aluminum Company of Canada, Ltd.	Shawinigan Falls.	Smelting plant.....	65,000	Aluminum ingots (including alloys)
" " "	Beauharnois.....	(See Smelting plant above) Smelting plant.....	34,000	" "
" " "	La Tuque.....	"	34,000	" "
" " "	Isle Maligne.....	"	20,000	" "

ANTIMONIAL-LEAD REFINERY

Consolidated Mining and Smelting Co. of Canada, Ltd.	Tadanac (Trail)..	New plant replacing antimony refinery, started March, 1945 Equipment: Reduction and refining furnaces for treating antimonial flue dusts and refined lead drosses. Equipment with capacity equivalent to 600 tons of antimony per year.	Tons 600	Antimonial lead (25% antimony) (Intermittent operation)
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BISMUTH REFINERY

Consolidated Mining and Smelting Co. of Canada, Ltd.	Tadanac (Trail)..	Reverberatory furnace for the reduction of lead-bismuth-copper slags; Six crystallizing kettles for Pattinsonization of lead-bismuth alloys and for complete elimination of silver by Parksing; Anode casting for lead-bismuth alloy; Parks process for elimination of silver; electrolytic cells (16); capacity 8 tons of lead per day; Melting furnace for bismuth slimes; graphite crucibles for removing lead before last kettles. Two 5-ton kettles for refining bismuth metal for market.	Tons 180	Metallic bismuth (Intermittent operation)
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Table 204.—Non-Ferrous Smelters and Refineries in Canada—Continued

CADMIUM REFINERY

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
Manitoba				
Hudson Bay Mining and Smelting Co., Limited	Flin Flon.....	Pan grinder, mechanical agitators, shriver presses, sponge precipitation agitators, 10 electrolytic cells, 2 electric melting pots; treating cadmium residue from zinc refinery.	Tons 180	Metallic cadmium
British Columbia				
Consolidated Mining and Smelting Co. of Canada, Ltd.	Tadanac (Trail)...	Mechanical mixers; Pachuca tanks; Kelly filters; precipitating tanks; two electrolytic units; three small pot furnaces; melting plant; treating cadmium residues from the zinc refinery.	700	Metallic cadmium

CALCIUM REDUCTION WORKS

Ontario				
Dominion Magnesium Co., Ltd.	Haley (near Renfrew)	Reduction under high vacuum in electric furnaces.	Tons	Metallic calcium

COPPER SMELTERS

Quebec				
Noranda Mines, Ltd.....	Noranda.....	<p>Twenty-six (26) storage bins (18 used for sulphides, each with a capacity of 400 tons and 8 used for siliceous ore, each with a capacity of 140 tons); ten (10) Wedge-type roasters, 8 with inside diameter 25' with seven internal hearths, each roaster with a capacity of 325 tons per day, and two roasters 25' inside diameter with 9 internal hearths and a capacity of 400 tons per day, reducing the sulphur in feed from 28% to 14%;</p> <p>Two 2,100-ton reverberatory furnaces, 33' x 111½' inside dimensions, side feeding, and burning pulverized coal;</p> <p>Five Pierce-Smith converters, two 12' x 30', two 13' x 30', one 13' x 28'.</p> <p>Two Cottrell precipitators, one of six units in parallel for roaster gases, and one of four units in parallel for converter gases and anode furnace gases; two stacks 422½' high, measuring 31' outside and 23' inside diameter at the base, and 20' outside and 18' inside diameter at the top;</p> <p>Anode furnace, dimensions 14' x 23' 3" at hearth, capacity 250 tons per day and burning pulverized coal; Walker casting wheel (22 moulds) for making 700 lb. anodes.</p>	Tons 73,000	Anode copper
Ontario				
International Nickel Co. of Canada, Ltd.	Copper Cliff.....	(See Nickel-copper).....		Blister copper

Table 204.—Non-Ferrous Smelters and Refineries in Canada—Continued

COPPER SMELTERS—Concluded

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
Manitoba				
Hudson Bay Mining and Smelting Co., Limited	Flin Flon.....	<p>Four bedding bins, each with a capacity of 2,500 tons; four Herreshoff 10-hearth roasting furnaces, 21' 6" in diameter, each with a roasting capacity of 375 tons of feed in 24 hours;</p> <p>One 1,500-ton reverberatory furnace, size: smelting zone 29' 8" wide, settling zone 22' 6" wide, length 101' 6", and fired by pulverized coal;</p> <p>Three 13' x 30' Pierce-Smith basic lined converters, served by two 30-ton electric cranes;</p> <p>Two Cottrell precipitators; Walker casting wheel, 34' diameter;</p> <p>One 13' x 20' tilting blister copper holding vessel fired by pulverized coal;</p> <p>One coal pulverizing plant with a capacity of 65 tons in 8 hours.</p>	Tons 60,000	Blister copper

COPPER REFINERIES

Quebec				
Canadian Copper Refiners, Ltd. (a)	Montreal East....	<p>Receiving department: Two 7½-ton cranes; two cathode shears; two track scales.</p> <p>Charging aisle: Two 7½-ton overhead cranes; one Morgan charging machine, capacity 4 tons; one track scale.</p> <p>Furnace aisle: One 150-ton reverberatory anode furnace, oil-fired, hearth 26' 9" x 12' 8". One 300-ton reverberatory wire bar furnace, oil-fired, hearth 43' 2" x 14' 9".</p> <p>Casting aisle: One 33' Walker wheel casting machine for making anodes, holding 22 anode moulds, capacity 48 tons of anodes per hour (commercial anodes 36" x 36" x 1½", weight 700 lb.; stripper anodes, 38" x 38" x 1½", weight 770 lb.); water cooling bosh, capacity of 44 anodes; One Walker wheel for casting wire bars and ingots, capacity 84 tons per hour; water cooling bosh and pan conveyer; one 10-ton crane.</p> <p>Copper storage and shipping aisle: Two 5-ton cranes; two track scales.</p> <p>Electrolytic tank house: 612 lead-lined concrete commercial cells arranged in 34 sections of 18 each (cell 16' 7" long, 3' 7½" wide, and 4' 1½" deep, inside dimensions); 54 lead-lined concrete stripper cells arranged in 3 sections of 18 each (cell 17' 5" long, 3' 9½" wide, and 4' 2½" deep, inside dimensions); 8 sump tanks, 3 slime pits, two movable and one stationary washing machines for removing electrolyte from cathodes; two 7½-ton overhead cranes; 13 purification cells for liberating copper from discarded electrolyte and from slimes leach liquors.</p>	Tons 112,000	Refined copper

(a) Canadian Copper Refiners, Ltd. Controlled by Noranda Mines, Ltd. Refining anode copper of the Noranda and blister copper of the Flin Flon smelters.

Table 204.—Non-Ferrous Smelters and Refineries in Canada—Continued

COPPER REFINERIES—Continued

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
Ontario				
International Nickel Co. of Canada, Ltd. (Copper Refining Division)	Copper Cliff.....	<p>Pig storage building: Two 10-ton overhead cranes.</p> <p>Anode charging aisle: Two 4-ton suspended charging cranes; two 10-ton service cranes.</p> <p>Anode furnace aisle: Three pulverized coal-fired reverberatory anode furnaces—each with a capacity of 300 tons.</p> <p>Anode casting aisle: Five 36' Walker wheels, each having 22 anode moulds and a capacity of 50 tons of anodes per hour. (Anodes 36" x 36" x 1½"—weight 560 lb.) Cooling boshes—capacity 60 tons each; two 10-ton service cranes.</p> <p>Anode storage building: Two 10-ton cranes: one cathode shear gap, 4' 6" x 18"—capacity ½" to ¾" copper cathodes.</p> <p>Electrolytic tank house: 1,350 lead-lined tanks (regular and stripper) arranged in 36 sections mostly of 38 tanks each (each tank 11' 3" long, 3' 6" wide, and 3' 9¼" deep, inside dimensions). Pyne-Green segregating cells used to concentrate the nickel sulphate solutions.</p> <p>Cathode storage aisle:</p> <p>Wire bar charging aisle: Two 4-ton suspended charging cranes; one 10-ton and one 15-ton service crane.</p> <p>Wire bar furnace aisle: Two pulverized coal-fired reverberatory furnaces, each of 300-ton capacity; two 30-ton, three-phase, direct arc furnaces.</p> <p>Wire bar casting aisle: Three 40' Clarke casting wheels; four cooling boshes and conveyers; one 35' vertically cast shapes wheel.</p> <p>Wire bar storage inspection and shipping building: Two 10-ton overhead cranes.</p> <p>Acid plant: Two sections of liberator cells and auxiliary storage tanks; three vacuum evaporators; two 40' centrifuges; spray pond and cooling tanks for crude nickel sulphate residues.</p> <p>Nickel salts plant: Two dissolving tanks; one precipitation tank; one wooden filter press; one open type evaporator; a 26' centrifuge and eight crystallizing tanks.</p>	<p>Tons</p> <p>168,000</p>	<p>Refined copper</p> <p>Nickel sulphate</p>

LEAD SMELTER

LEAD REFINERY

MAGNESIUM REDUCTION WORKS

Ontario	Dominion Magnesium Co., Ltd.	Haley (near Renfrew)	Tons	15 tons per day	Refined magnesium, and magnesium alloy ingots
		<p>Ferrosilicon (Pidgeon) Process: Crushing; calcining of dolomite; mixing and briquetting of calcined dolomite and ferrosilicon. Reduction plant consisting of ten (10) electrically heated retort furnaces. Melting and alloying plant for production of pure magnesium and magnesium alloy ingots from the magnesium condensate.</p>			

Table 204.—Non-Ferrous Smelters and Refineries in Canada—Continued

NICKEL-COPPER SMELTERS

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
Ontario				
International Nickel Company of Canada, Ltd.	Copper Cliff.....	Roasters: Forty-two Herreshoff roasting furnaces (dimensions: outside diameter 21½'; height 31'; ten interior hearths and a drying hearth). These roasters are superimposed over seven reverberatory furnaces; capacity 4,000,000 tons (ore and concentrate) a year.	Tons	
		Cottrell plant: (a) Roasters—Eleven units of three sections, treating gases from roasters. (b) Converters—Seven units of three sections each treating gases from nickel converters.		
		Reverberatory furnaces: (a) Nickel—Seven reverberatory furnaces; five are 27' 6" x 110', one is 29' x 110'; and one is 24' x 110', inside dimensions. Total rated capacity per day, 11,000 tons of dry solid charge. (b) Copper—Two reverberatory furnaces, 24' x 110', inside dimensions. Total rated capacity per day 1,700 tons of dry solid charge.		
		Converters: (a) Nickel—Fifteen Pierce-Smith converters treating nickel-copper matte, dimensions 13' x 35'. (b) Copper—Five Pierce-Smith converters, blowing copper matte to blister copper.	235,000	Copper-nickel Bessemer matte
		Blast furnaces: Two blast furnaces retained for smelting ore and reverts; total rated capacity, 1,800 tons per day		
		Stacks: Nickel circuit—One brick stack 500' high above the base and 45' diameter at top. Copper circuit—One reinforced concrete stack 500' high above base and 40' diameter at top. Orford department—One reinforced concrete stack 350' high and 26' diameter at top.		
		Orford cupolas: Three cupola furnaces for smelting nickel-copper matte and flux (dimensions 48½" x 198").		Nickel sulphide.
		Orford converters: (a) Basic converters—Three Pierce-Smith (dimensions 10' x 35') used for separating flux (sodium sulphide) from copper sulphide. (b) Clay-lined converters—Six upright converters (dimensions 8' diameter x 14' long), used for blowing copper sulphide to blister copper.		Blister copper
		Six Dwight-Lloyd sintering machines (dimensions 42" x 396", capacity 275 tons each; usual 6" layer; fuel oil ignition used);		
		Four blast furnaces—50" x 240" at tuyere with settlers 20' in diameter—capacity 3,000 tons of ore and concentrate per day;		
International Nickel Company of Canada, Ltd.	Coniston.....	Five 13' x 30' Pierce-Smith basic converters—capacity 5,000 tons of matte per month.	55,000	Copper-nickel Bessemer matte

Table 204.—Non-Ferrous Smelters and Refineries in Canada—Continued

NICKEL-COPPER SMELTERS—Concluded

Ontario—Concluded		Tons	
Falconbridge Nickel Mines, Ltd.	Falconbridge.....	Five standard Dwight-Lloyd sintering machines (dimensions 42' x 396'; nominal capacity 150 tons each, actual total capacity 750 tons per day; usual 6' layer; fuel oil ignition); Two blast furnaces, size: one 20' x 50', one 15' x 50'; total capacity 1,200 tons of ore per day; Three Pierce-Smith converters: one 13' x 24' with 38 tuyeres, and two 13' x 24' with 34 tuyeres; casting moulds.	Cu 6,000 Ni 12,000 Copper-nickel Bessemer matte
International Nickel Company of Canada, Ltd. (Nickel Refining Division)	Port Colborne....	Wet process treatment (nickel): Five crushers (18' x 30' Farrel); five ball mills (four No. 8 Krupp and one 7' 6" Traylor); sixty concrete and nine wooden tanks, 14' x 12' x 4' 6"; eleven mechanical calciners and two hand calciners; sixteen concrete leaching tanks, 14' x 12' x 4' 6". Product, partly roasted sulphide, green nickel oxide and black nickel oxide. Anode nickel department: Seven Dwight-Lloyd sintering machines, 42' x 264'; one trommel (4' in diameter x 8' long); one jaw crusher, 18' x 30'; two Symons cone crusher (one 4', the other 5' 6"); two Hammer screens; six anode furnaces, five of which vary in hearth area from 609 to 776 sq. ft., used for anode making, and one with 207 sq. ft. hearth area used for melting nickel cathodes; five anode casting wheels. Electrolytic department: Twelve units, each served by two 3-ton bridge cranes and one 3-ton work floor crane; units Nos. 1, 2 and 3 have 112 tanks each, units 4 to 12 have 156 tanks each, and there are 40 additional tanks in annex; stainless steel sheets are used as starting blanks in all units.	..... ..... ..... 106,000 Washed nickel sulphide Partially roasted sulphide Green nickel oxide Black nickel oxide Anode nickel Anode slimes: refined nickel (precious metals)

PRECIOUS METALS REFINERIES

Quebec		Tons	
Canadian Copper Refiners, Ltd.	Montreal East....	Slimes wet room: Surge tank for holding tank house anode slimes; Dorco pump; Dorr thickener; Oliver filter; Nichols-Herreshoff drying furnace, capacity 5 tons dried slimes per day; tanks for water leaching acid-roasted slimes; Dorco pump; Oliver filter; tank for caustic leaching treated slimes; four filter presses; solution storage tanks. Roaster room: Chain roasters for roasting dry slimes, capacity 7 tons roasted slimes per day; six digesters for mixing dried slimes with acid; scrubber and Cottrell system for recovering selenium and acid from chain roaster gases.	Fine ounces Au: 600,000 Ag: 5,400,000 Fine gold, fine silver

Table 204.—Non-Ferrous Smelters and Refineries in Canada—Continued

PRECIOUS METALS REFINERIES—Continued

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
Quebec—Concluded				
Canadian Copper Refiners, Ltd. —Concluded	Montreal East....	<p>Doré furnace room: One reverberatory oil-fired Doré furnace (hearth area 34½ sq. ft.), charge 12,000 lb. caustic-leached slimes, producing Doré metal. (Au 10%, Ag 89.5%, Cu 0.5%) and slags (scoria slag and nitre slag to anode furnace, No. 2 soda slag water-leached and filtered, solution for selenium recovery and residue to anode furnace); scrubber and Cottrell system for recovering flue dust from Doré furnace gases; slag crushing and sampling mill; slag leaching tank.</p> <p>Parting plant: Fifteen rubber- and brick-lined steel Moebius cells, operating at 25 amps. per sq. ft. cathode area; carts for washing silver crystals; silver sand storage bin; silver melting retort; moulds for casting silver bars (1,000 Troy ounces each and 999+fine); Gold boiling kettle; gold sand filter; Monarch tilting crucible furnace; moulds for casting gold bars (700 Troy ounces each and 998+fine). Crucible furnace for melting scrap Doré anodes; dissolving tank for electrolyte makeup; wash water storage and cementation for recovering silver from discard parting plant electrolytes. Moebius cell, capacity 450,000 ounces silver per month.</p>	Tons	
Ontario				
International Nickel Co. of Canada, Ltd. (Copper Refining Division)	Copper Cliff.....	<p>Slimes room: Electrolytic slime from copper refinery treated; two 40-inch lead-lined centrifuges for separating and drying slimes.</p> <p>Furnace room: Roasting furnace for treatment of raw slimes to remove copper; Doré furnace for treatment of leached slimes to produce Doré metal.</p> <p>Parting plant: Forty (40) Balbach Thum mastic lined concrete tanks and one oil-fired furnace for melting silver crystals.</p> <p>Gold, platinum and palladium room: Treating parting plant slimes; one stoneware dissolving kettle; two gold precipitating kettles; and two cementation tanks—cementing out platinum and palladium. Precipitated gold cast into anodes and refined electrolytically in Wohlwill cells.</p>	<p>Au: 100,000 Ag: 2,800,000</p>	Fine gold, fine silver (impure platinum and palladium)
Manitoba				
Hudson Bay Mining and Smelting Co., Limited	Flin Flon.....	Cyanidation; precipitate treated in smelter.	.....	Gold-silver precipitate (feed: 1,642,500 tons)

Table 204.—Non-Ferrous Smelters and Refineries in Canada—Continued

PRECIOUS METALS REFINERIES—Concluded

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
British Columbia				
Consolidated Mining and Smelting Company of Canada, Ltd.	Trail.....	Drying chambers for lead slimes; two melting furnaces: one slag re-treatment furnace; two oxidizing furnaces; two Doré furnaces; first slag (lead-antimony) returned to blast furnaces; second slag (lead, copper and bismuth oxides and silver) to bismuth plant; flue dust to antimonial lead plant. Parting plant: Balbach Thum electrolytic plant (92 cells) for treatment of Doré metal for recovery of gold and silver (capacity 40,000 oz. per day); Bailey furnace (electric) for melting silver crystals; gold to gold kettle and filter; Globar furnace for melting gold.	Tons Au: 350,000 Ag: 12,000,000	Fine gold and fine silver

RADIUM REFINERY

Ontario				
Eldorado Mining and Refining (1944), Ltd.	Port Hope.....	Oxidizing, roasting of pitchblende-silver ore, salt-roasting of ore, followed by acid leaching; treatment of uranium solution with soda ash, acid, and sodium hydroxide for recovery of sodium uranate. Recovery of silver from residues by hyposulphite leaching and treatment with sodium sulphide; treatment of residues with soda ash, followed by acid leaching, to put radium into solution; conversion of radium to bromide and recovery by fractional crystallization.	Tons 2,400 tons of ore a month.	Uranium oxide (black), uranium nitrate, sodium uranate, radium bromide, silver sulphide, radioactive lead

SILVER-COBALT-NICKEL-ARSENIC SMELTER AND REFINING WORKS

Ontario				
Deloro Smelting & Refining Company, Ltd.	Deloro.....	Blast furnace: (Products: silver bottoms, crude arsenic and speiss.) Silver: Refining furnace and melting furnace. (Product: fine silver.) Arsenic: Bag house, refining furnace, blast furnace re-treatment. (Products: refined arsenic, bismuth-lead bullion.) Speiss: Ball mill, Edwards roasters, Brückner chloridizer ball mill, leaching tanks, cyanidation-precipitation tank, filter presses, silver melting furnace. (Products: fine silver and speiss residue.) Speiss residue: To cobalt oxide plant.	Tons 5,000 tons of ore or concentrate Ag: 6,000,000 ozs. As ₂ O ₃ : 2,000 tons	..... Silver bullion White arsenic

Table 204—Non-Ferrous Smelters and Refineries in Canada—Continued

SILVER-COBALT-NICKEL-ARSENIC SMELTER AND REFINING WORKS—Concluded

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
Ontario—Concluded				
Deloro Smelting & Refining Company, Ltd.— <i>Concluded</i>	Deloro.....	Cobalt oxide and metal plant: Steam plant—high and low pressure air compressors. Sulphating equipment — dissolving tanks, Oliver filter, precipitation tanks, filter presses, calcining furnaces, reduction furnaces; pulverizing and packing equipment.	Tons	Cobalt oxide and cobalt metal
		Stellite plant: Electric melting furnaces, mould and casting shop, testing equipment, grinding and finishing equipment.	.....	Stellite cutting tools and hard facing rods

SELENIUM REFINERY

Quebec				
Canadian Copper Refiners, Ltd.	Montreal East....	Eliminated in sulphatizing roast of silver slimes in muffle-fired roasting furnaces and collected in solution in lead gas scrubber. Precipitated out of scrubber solution in 6 precipitators, settled, washed, dried, retorted, ground, screened, and packed.	Pounds 450,000	Refined selenium
Ontario				
International Nickel Co. of Canada, Ltd. (Copper Refining Division)	Copper Cliff.....	Three receiving tanks; three neutralizer tanks; one wooden filter press; one vacuum evaporator; three precipitating tanks; one 150-lb. capacity rod mill; two Rotex screens; and one micro pulverizer.	.....	Refined selenium.

TELLURIUM REFINERY

Quebec				
Canadian Copper Refiners Ltd.	Montreal East....	Obtained from caustic leach liquors from silver slimes and Doré furnace slags, neutralized, mixed with sulphuric acid, roasted, water leached, acid leached, precipitated with SO ₂ , washed, dried, and melted in furnace and poured into moulds as finished product.	Pounds 50,000	Metallic tellurium
Ontario				
International Nickel Co. of Canada, Ltd. (Copper Refining Division)	Copper Cliff.....	Two dissolving tanks; one leaf filter; two vacuum bottles; two precipitation tanks; one tilting oil-fired furnace; one micro pulverizer; one Rotex screen.	.....	Metallic tellurium

TIN SMELTER

British Columbia				
Consolidated Mining and Smelting Co. of Canada, Ltd.	Kimberley.....	Tin recovered from iron flotation tailings, blanketed, tabled, and smelted in electric furnace.	Tons 700	Metallic tin

Table 204.—Non-Ferrous Smelters and Refineries in Canada—Concluded

ZINC ELECTROLYTIC REFINERIES

Company	Location of Plant	Process and Equipment	Rated Annual Capacity	Product
Manitoba				
Hudson Bay Mining and Smelting Co., Limited	Flin Flon.....	<p>Roasters: Eight 7-hearth Wedge roasters, 25' in diameter.</p> <p>Leaching and filtering: Pachuca tanks, Dorr classifiers, thickeners, Moore filters.</p> <p>Electrolytic precipitation: 840 electrolytic tanks, each holding 18 aluminum sheets. Two reverberatory furnaces (capacity 150 tons of zinc per day) for melting cathode zinc.</p>	<p>Tons</p> <p>50,000</p>	Bar zinc
British Columbia				
Consolidated Mining and Smelting Company of Canada, Ltd.	Tadanac (Trail) ..	<p>Roasters: Twenty-five (25) 7-hearth Wedge roasters (eight modified for flash roasting).</p> <p>Leaching and filtering: Pachuca tanks, classifiers; ball mill, Dorr thickeners, purifying mixers, thickeners and Kelly filters and Sheiver filters.</p> <p>Electrolytic precipitation: Electrolytic tanks; five reverberatory furnaces for melting cathode zinc.</p> <p>Re-treatment plant: Pug mills (mixers); cell room (acid); eight Pachuca tanks (4 acid and 4 neutral); six thickeners (3 acid and 3 neutral); eight purification mixers; nine Kelly filters and four American filters.</p> <p>Capacity of plant: 365,000 tons of concentrate per year.</p>	<p>165,000 (465 per day)</p>	Bar zinc

CHAPTER SEVEN

THE MINERAL FUELS INDUSTRIES IN CANADA

The Coal Mining Industry.

The Coke and Gas Industry.

The Natural Gas Industry.

The Peat Industry is included under non-metals, chapter 8.

The Petroleum Industry:

1. Production of Crude Petroleum;
2. Production of Petroleum Products.

NOTE:—In order to correlate data regarding fuels in Canada, this chapter has been prepared to include statistics of the coal, natural gas, and petroleum industries. This survey presents information regarding these industries as a whole, dealing principally with the mineral industry, although supplementary data are shown for closely allied manufacturing operations.

The Bureau issues an annual report on Coal Statistics for Canada which may be referred to for complete details of the Coal Mining Industry.

THE COAL MINING INDUSTRY

Production of coal in Canada during the calendar year 1946 amounted to 17,811,747 tons, an increase of 8 per cent over the production of the previous year. Compared with 1945, production increased 7 per cent in Nova Scotia, 3 per cent in New Brunswick and 13 per cent in Alberta, but declined 1 per cent in Saskatchewan and 4 per cent in British Columbia. Of the total production for the year 3,323,196 tons or approximately 19 per cent was obtained from stripping operations.

Coal imported during 1946 totalled 26,639,918 tons, an increase of 8 per cent over the 24,588,702 tons imported in 1945. Exports of coal amounted to 862,489 tons in 1946 compared with 840,708 tons in 1945.

Coal made available for consumption in 1946 amounted to 43,589,176 tons, an increase of 8 per cent over the quantity available for consumption in the previous year. These figures do not represent the quantity consumed during the year but are the actual tonnages of new coal made available for use and are calculated by adding production and imports and subtracting exports.

During 1946 Canadian coal mines employed 1,332 salaried employees and 24,155 wage-earners and paid a total of \$51,343,925 in salaries and wages.

Change in Classification of Canadian Coal

Since 1945 the Dominion Bureau of Statistics has been using the classification adopted by the American Society for Testing Materials (A.S.T.M.). The new classification is the result of the joint work of the United States and Canadian chemists, fuel technologists, geologists and others, and is an attempt to provide a uniform system of classification for coals on this continent.

Report(*) No. 814, dated June, 1939, of the National Research Council of Canada, explains the specifications of the A.S.T.M. classification and its application to Canadian coals, and recommends the adoption of this classification for general use by the Dominion Government and the industry.

The application of the A.S.T.M. classification for statistical purposes involves a change only in the coals of the province of Alberta; coals of the other provinces remain classified as before.

The effect of the A.S.T.M. classification when applied to Alberta coals is a general promotion in rank of the low rank coals, in which coals formerly classified as sub-bituminous are raised to the rank of bituminous, and coals formerly classified as lignite are raised to the rank of sub-bituminous, with exception that coals from three former lignite districts—Halcourt, Lethbridge and Magrath—now become bituminous. Coals formerly classified as bituminous remain as such.

The new classification does not create any partition of individual districts, the districts being only re-grouped into the two divisions, bituminous and sub-bituminous, instead of bituminous, sub-bituminous and lignite as previously.

* Report on the A.S.T.M. Standard Specifications for Classification of Coals by Rank and by Grade and their Application to Canadian Coals, prepared for the Associate Committee on Coal Classification and Analysis of the National Research Council of Canada.

Table 205.—Output of Coal in Canada, by Grades, 1931-1946

Calendar Year	Bituminous		Sub-bituminous		Lignite		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
		\$		\$		\$		\$
1931.....	9,692,732	35,581,558	1,886,337	4,677,068	664,142	949,056	12,243,211	41,207,682
1932.....	8,666,277	30,636,270	2,183,945	5,248,292	888,691	1,233,133	11,738,913	37,117,695
1933.....	8,875,309	30,072,157	2,096,506	4,556,595	931,529	1,295,210	11,903,344	35,923,962
1934.....	10,914,405	36,568,356	1,982,387	4,227,504	913,401	1,250,082	13,810,193	42,045,942
1935.....	10,671,305	35,609,964	2,291,810	5,052,070	924,891	1,301,076	13,888,006	41,963,110
1936.....	11,717,648	38,736,380	2,486,713	5,582,349	1,024,821	1,473,205	15,229,182	45,791,934
1937.....	12,496,642	42,049,957	2,286,792	5,200,045	1,052,520	1,502,046	15,835,954	48,752,048
1938.....	11,164,742	37,714,195	2,105,794	4,881,900	1,024,182	1,386,076	14,294,718	43,982,171
1939.....	12,614,236	42,442,382	2,117,324	4,975,636	961,138	1,258,972	15,692,698	48,676,990
1940.....	14,262,922	47,921,227	2,204,748	5,340,040	1,099,214	1,412,577	17,566,884	54,673,844
1941.....	14,531,862	50,088,519	2,370,050	6,254,222	1,324,009	1,716,889	18,225,921	58,059,630
1942.....	14,822,230	53,423,090	2,740,419	7,710,663	1,302,381	1,763,828	18,865,030	62,897,581
1943.....	13,358,664	51,798,996	2,833,422	8,643,340	1,666,971	2,435,213	17,859,057	62,877,549
1944.....	12,988,328	59,303,397	2,665,405	9,094,858	1,372,766	2,034,914	17,026,499	70,433,169
1945.....	11,774,164	54,689,261	3,199,554	10,572,059	1,532,995	2,327,082	16,506,713	67,588,402
1946.....	12,851,365	61,044,144	3,436,893	12,231,923	1,523,489	2,544,092	17,811,747	75,820,159

Figures shown in above table have been adjusted to agree with A.S.T.M. classification.

Table 206.—Output and Value of Coal in Canada, by Kinds and Provinces, 1945 and 1946

(Short tons)

Province	1945			1946		
	Number of mines	Quantity	Value	Number of mines	Quantity	Value
		tons	\$		tons	\$
NOVA SCOTIA (Bituminous).....	38	5,112,615	28,350,278	42	5,452,868	30,573,883
NEW BRUNSWICK (Bituminous).....	29	361,184	2,021,806	33	370,655	2,099,373
MANITOBA (Lignite).....						
SASKATCHEWAN (Lignite).....	79	1,532,995	2,327,082	70	1,523,489	2,544,092
ALBERTA—						
Bituminous.....	37	4,600,597	17,179,318	42	5,389,418	21,210,007
Sub-bituminous.....	162	3,199,554	10,572,059	156	3,436,893	12,231,923
Total.....	199	7,800,151	27,751,377	198	8,826,311	33,441,930
BRITISH COLUMBIA (Bituminous).....	28	1,699,768	7,137,859	22	1,638,424	7,160,881
YUKON (Bituminous).....						
CANADA—						
Bituminous.....	132	11,774,164	54,689,261	139	12,851,365	61,044,144
Sub-bituminous.....	162	3,199,554	10,572,059	156	3,436,893	12,231,923
Lignite.....	79	1,532,995	2,327,082	70	1,523,489	2,544,092
Total.....	373	16,506,713	67,588,402	365	17,811,747	75,820,159

Table 207.—Employees, Salaries and Wages in the Coal Mines, by Provinces, 1946

Province	Average number of employees					Salaries and wages		
	Salaried employees		Daily wage-earners		Total	Salaries	Wages	Total
	Male	Female	Surface	Under-ground				
Nova Scotia.....	322	47	1,882	10,980	13,331	\$ 829,194	\$ 24,835,100	\$ 25,664,294
New Brunswick.....	39	9	249	517	814	121,804	1,283,539	1,405,343
Manitoba.....								
Saskatchewan.....	42	4	294	146	486	81,733	745,285	827,018
Alberta.....	640	33	2,264	5,626	8,563	1,492,479	17,008,068	18,500,547
British Columbia.....	188	8	539	1,658	2,393	387,603	4,559,170	4,946,773
Canada.....	1,231	101	5,228	18,927	25,487	2,912,813	48,431,162	51,343,975

Table 208.—Employment and Days' Work Done, by Months, at Coal Mines in Canada, 1946, with Comparative Totals for 1945

Month	Number of employees			Man-days worked		
	Surface	Under-ground	Total	Surface	Under-ground	Total
January.....	6,279	20,117	26,396	154,763	433,585	588,348
February.....	6,126	20,107	26,233	137,676	402,422	540,098
March.....	5,896	19,985	25,881	144,270	428,432	572,702
April.....	5,671	19,344	25,015	129,284	390,734	520,018
May.....	5,730	19,045	24,775	137,075	406,469	543,544
June.....	5,844	18,999	24,843	127,980	366,182	494,162
July.....	5,914	18,848	24,762	124,522	316,392	440,914
August.....	5,959	18,873	24,832	135,381	372,250	510,631
September.....	5,983	18,951	24,934	133,663	376,980	510,643
October.....	6,143	19,304	25,447	143,540	412,075	555,615
November.....	6,459	19,993	26,452	142,790	392,742	535,532
December.....	6,468	19,813	26,281	137,380	367,512	504,892
Total 1946.....				1,651,324	4,665,775	6,317,099
Total 1945.....				1,598,452	4,571,573	6,170,025

The Coke and Manufactured Gas Industry

Production from coke plants and from illuminating and fuel gas plants in Canada during 1946 was valued at \$62,582,475, a decline of 9.4 per cent from the \$68,483,305 of the previous year. Output included 3,363,109 tons of coke valued at \$32,676,130 at the works, 61,065,424 M cubic feet of gas valued at \$25,931,069, and by-products valued at \$3,975,276.

Thirty coke and gas works operated in 1946, including 11 by-product and bee-hive plants, 18 retort coal and water gas plants, and 1 butane gas plant. Fifteen of these works were located in Ontario, 4 in British Columbia, 5 in Quebec, 2 in Manitoba, 2 in Nova Scotia, 1 in New Bruns-

wick and 1 in Alberta. In addition to these producers, 1 company in Quebec and 2 in Ontario purchased coke-oven gas and distributed it for domestic or commercial use, and data covering their operations have been included to round out the figures for the industry.

Output of coke from gas retorts, by-products and bee-hive ovens totalled 3,363,109 tons in 1946 compared with 3,912,320 tons in 1945 and 4,017,696 tons in 1944. By-product and bee-hive ovens produced 3,098,189 tons of coke in 1946 and gas retorts made 264,920 tons. In addition, 69,615 tons of petroleum coke were recovered in petroleum refineries and 18,598 tons of pitch coke in coal tar distillation plants.

Data on the distribution of coke (except petroleum and pitch coke) by the producers show that 189,271 tons were sold direct to domestic consumers; 1,324,909 tons were used in associated works operated by the producing companies; 399,158 tons were used by coke plants as fuel or to make water gas; 677,427 tons were sold direct to consumers for foundry and other uses (other than domestic); 801,337 tons were sold to dealers for resale, and 43,388 tons were sold for export. The total distribution was 3,392,102 tons, including imports by the producers of 40,000 tons. Total stocks of coke in the hands of producers amounted to 363,987 tons at the end of 1946.

Imports into Canada of coke made from coal decreased to 900,833 tons in 1946 from 1,244,398 tons in 1945, and exports increased to 49,192 tons from 38,665 tons. Imports of petroleum coke during this period increased to 221,678 tons from 192,122 tons and exports (including re-exports of imported coke) decreased to 14,677 tons from 22,314 tons.

Manufactured gas, sold and used, amounted to 61,065,424 M cubic feet in 1946, including 45,595,212 M cubic feet from by-product ovens and 15,470,212 M cubic feet from gas plants. Sales of gas by the producers totalled 22,503,927 M cubic feet, of which 12,951,689 M cubic feet were from by-product ovens and 9,552,238 M cubic feet were from gas works. Most of the remaining gas was used as fuel in the producing plants or in their associated metallurgical works. These figures do not include 53,365 M cubic feet of (Pintsch) oil gas for lighting railway cars, 11,511,941 M cubic feet of still gas recovered at petroleum refineries, nor iron blast furnace gas and producer gas which was recovered and used by the producers but for which no records are available.

The number of customers served with manufactured illuminating and fuel gas in 1946 was 548,033, the length of distributing mains was 2,948 miles, and the average calorific value of the gas sold ranged from 450-570 B.T.U. per cubic foot.

Table 209.—Materials Used in Coke and Gas Plants, 1945 and 1946

Material	Unit of measure	1945		1946	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Bituminous coal carbonized in ovens or retorts—					
(a) Canadian.....	ton	1,136,436	6,509,235	1,185,266	7,440,795
(b) Imported.....	ton	3,996,049	28,248,799	3,259,195	23,931,424
Bituminous coal for making water gas—					
(a) Canadian.....	ton			417	3,761
(b) Imported.....	ton	6,764	57,532	6,702	62,641
Coke for gas-making—					
(a) Purchased.....	ton	10,759	120,273		156,635
(b) Companies' own make.....	ton	91,122	742,909		976,502
Oil used for enriching water gas.....	Imp. gal.	10,655,717	836,488	13,126,351	1,062,785
Absorbing and wash oil.....	Imp. gal.	275,792	36,117	245,897	29,999
Caustic soda.....	lb.	1,936,288	39,239	1,040,063	24,064
Lime.....	ton	1,849	26,087	1,304	18,378
Water.....			39,967		47,017
Iron oxide.....	ton	7,357	57,441	9,385	69,899
Sulphuric acid, 66° Bé.....	lb.	67,830,415	560,007	55,052,729	455,986
All other materials.....			472,388		429,273
Total Cost.....			37,746,482		34,709,153

Table 210.—Products Made in Coke and Gas Plants, 1945 and 1946

Product	Unit of measure	1945		1946	
		Quantity	Gross selling value at works	Quantity	Gross selling value at works
GAS MADE—			\$		\$
Retort coal gas.....	M cu. ft.	12,661,741		9,744,357	
Coke oven gas.....	M cu. ft.	49,313,480		42,471,460	
Producer gas.....	M cu. ft.	2,031,124		1,337,275	
Water gas.....	M cu. ft.	5,885,110		7,101,932	
Propane and butane gas.....	M cu. ft.	130,394		118,012	
Total Gas Made.....	M cu. ft.	70,021,849		60,773,036	
GAS SOLD OR USED—					
Gas sold.....	M cu. ft.	21,551,189	19,916,643	22,503,927	20,916,981
Gas used in own coke or gas plants.....	M cu. ft.	20,999,668	2,656,833	18,299,361	2,302,714
Gas used in associated metallurgical works.....	M cu. ft.	24,531,485	2,160,752	18,257,178	1,662,323
Gas otherwise accounted for but not sold.....	M cu. ft.	328,489	125,693	222,902	63,358
Gas not accounted for.....	M cu. ft.	2,857,285	981,688	1,782,056	985,693
Total Gas Sold or Used.....	M cu. ft.	70,268,116	25,841,609	61,065,424	25,931,069
COKE MADE—					
Coke from by-product or bee-hive ovens.....	ton	3,332,578	34,210,045	2,857,600	29,005,738
Coke from gas retorts.....	ton	271,018	2,435,505	259,166	2,848,316
Coke breeze from by-product ovens.....	ton	272,033	940,017	240,589	782,211
Coke breeze from gas retorts.....	ton	36,691	86,424	5,754	39,865
Total Coke.....	ton	3,912,320	37,671,991	3,363,109	32,676,130
OTHER PRODUCTS—					
Tar.....	Imp. gal.	37,995,126	2,193,711	33,043,844	1,987,375
Ammonia liquor.....	lb. NH ₃	1,703,170	16,457	1,559,320	17,081
Ammonium sulphate.....	pound	78,573,124	1,140,273	60,949,463	865,322
Benzol.....	Imp. gal.	7,412,377	1,009,159	5,776,019	818,315
Toluol, xylol and naphthalene.....	Imp. gal.	1,675,115	558,279	671,922	188,086
All other products.....			51,826		99,097
Grand Total.....			68,483,305		62,582,475

The Natural Gas Industry

Production of natural gas in Canada totalled 47,900,184 thousand cubic feet valued at \$12,165,050 in 1946, a decrease of 1.1 per cent in quantity and value from the 1945 output of 48,411,585 thousand cubic feet at \$12,309,564. These figures include all natural gas sold for domestic, industrial or other uses and also the gas used as field fuel by the well operators, but the gas which is allowed to go to waste is not included.

The 40,097,096 thousand cubic feet produced in Alberta in 1946 was a decrease of 0.7 per cent from the record high of 40,393,061 thousand cubic feet in 1945. The major portion was produced in the Turner Valley field but about 30 per cent of the output came from the Viking and Kinsella, Foremost, Medicine Hat, Redcliff and other fields.

Production in Saskatchewan continued to increase and thus established a new record of 209,569 thousand cubic feet valued at \$61,740.

In Ontario there was a decline in production, the output in 1946 being 7,051,309 thousand cubic feet compared with 7,199,970 thousand cubic feet in the preceding year. There is a large demand for gas in the southwestern Ontario area both for home heating and for industrial use and efforts are being made to supplement the declining production by the use of propane units and by importing natural gas from the United States. A pipe line across the river at Windsor has recently been completed and some imported gas is now being received for use in the Windsor district and for storage in the Dawn Township field.

New Brunswick produced 541,010 thousand cubic feet valued at \$262,441, a decrease from 1945 when 653,230 thousand cubic feet were produced.

In 1946 the natural gas industry employed an average of 1,655 employees. The salaries and wages amounted to \$2,491,361. Fuel and electricity cost \$226,980 and \$21,457 was spent for process supplies. The industry as defined for statistical purposes is confined to wells that produce natural gas only. Wells that produce both natural gas and crude petroleum are included in the crude petroleum industry.

A review by the Bureau of Mines, at Ottawa, states that: "The large reserves of natural gas being built up in Alberta are a potential source of supply for industries which may be established to process natural gas for the production of gasoline and other by-products. Already in the United States a plant is being built for this purpose, and the time appears to be approaching when gasoline will be synthesized from natural gas at cost competitive with those for producing gasoline from crude oil. Another potential outlet for natural gas in Canada is its use in the manufacture of liquid gas for general cooking and heating. The liquid gas, a mixture of pentane and butane, is bottled under pressure, and, when used, pressure is released and the gas is burned in the gaseous form."

Table 211.—Principal Statistics for The Natural Gas Industry in Canada, 1937-1946

Year	Number of firms	Number of wells*	Average number of employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies	Gross Selling value of products
				\$	\$	\$	\$
1937.....	218	3,268	2,028	2,488,125	75,690	23,190	9,037,326
1938.....	218	3,325	1,966	2,506,121	67,725	15,162	9,831,564
1939.....	222	3,352	1,990	2,536,220	82,877	15,520	10,732,543
1940.....	236	3,438	2,189	2,748,740	85,561	8,793	11,203,103
1941.....	231	3,424	2,161	2,841,795	103,229	4,975	11,223,103
1942.....	212	3,566	1,940	2,826,811	92,489	12,313	11,356,350
1943.....	191	3,558	1,882	2,846,514	181,841	7,899	11,552,696
1944.....	211	3,621	1,810	2,885,654	188,003	13,149	9,772,357
1945.....	218	3,748	1,890	2,993,091	227,514	18,298	10,860,594
1946.....	219	3,825	1,665	2,491,361	226,980	21,457	10,588,175

* See Note to Table 2.

Table 212.—Principal Statistics, by Provinces, 1945 and 1946

Province	Number of firms	Number of wells*	Average number of employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies	Gross selling value of products
				\$	\$	\$	\$
1945							
New Brunswick.....	2	40	82	139,179	15,004	1,500	345,628
Ontario.....	191	3,573	1,244	1,820,178	150,775	16,781	4,837,586
Saskatchewan.....	5	9	7	8,971	1,998	.....	58,165
Alberta.....	20	126	557	1,024,763	59,737	17	5,619,215
Canada.....	218	3,748	1,890	2,993,091	227,514	18,298	10,860,594
1946							
New Brunswick.....	2	43	76	119,328	16,393	.....	287,111
Ontario.....	193	3,643	1,063	1,574,305	149,873	20,161	4,656,528
Saskatchewan.....	3	4	5	5,391	.....	.....	61,740
Alberta.....	21	135	511	792,337	60,714	1,296	5,582,796
Canada.....	219	3,825	1,655	2,491,361	226,980	21,457	10,588,175

* Wells which produce natural gas only; if both petroleum and natural gas were produced the wells were included in the Crude Petroleum Industry.

Table 213.—Production of Natural Gas in Canada, 1927-1946

Year	Quantity	Value	Year	Quantity	Value
	M cu. ft.	\$		M cu. ft.	\$
1927.....	21,376,791	8,043,010	1937.....	32,380,991	11,674,802
1928.....	22,582,586	8,614,182	1938.....	33,444,791	11,587,450
1929.....	28,378,462	9,977,124	1939.....	35,185,146	12,507,307
1930.....	29,376,919	10,289,985	1940.....	41,232,125	13,000,593
1931.....	25,874,723	9,026,754	1941.....	43,495,353	12,665,116
1932.....	23,420,174	8,899,462	1942.....	45,697,359	13,301,655
1933.....	23,138,103	8,712,234	1943.....	44,276,216	13,150,418
1934.....	23,162,324	8,759,652	1944.....	45,067,158	11,422,541
1935.....	24,910,786	9,363,141	1945.....	48,411,585	12,309,564
1936.....	28,113,348	10,762,243	1946.....	47,900,484	12,165,050

Table 214.—Production of Natural Gas in Canada, By Provinces, 1937-1946

Year	New Brunswick	Ontario	Saskatchewan	Alberta	Northwest Territories	Canada
			(M cubic feet)			
1937.....	576, 671	10, 746, 334	100, 380	20, 955, 506	1, 500	32, 380, 991*
1938.....	577, 492	10, 952, 806	90, 285	21, 822, 108	1, 500	33, 444, 791*
1939.....	606, 382	11, 966, 581	96, 423	22, 513, 660	1, 500	35, 185, 146*
1940.....	616, 041	13, 053, 403	100, 773	27, 459, 808	1, 500	41, 232, 125*
1941.....	653, 542	11, 828, 703	106, 168	30, 905, 440	1, 500	43, 495, 353
1942.....	619, 380	10, 476, 770	117, 124	34, 482, 585	1, 500	45, 697, 359
1943.....	675, 029	7, 914, 408	116, 201	35, 569, 078	1, 500	44, 276, 216
1944.....	702, 464	7, 082, 508	119, 116	37, 161, 570	1, 500	45, 067, 158
1945.....	653, 230	7, 199, 970	163, 824	40, 393, 061	1, 500	48, 411, 585
1946.....	541, 010	7, 051, 309	209, 569	40, 097, 096	1, 500	47, 900, 484

* Includes 600 M cu. ft. in Manitoba.

Table 215.—Production(*) of Natural Gas in Canada, By Provinces, 1945 and 1946

Province	1945		1946	
	M cu. ft.	Value	M cu. ft.	Value
New Brunswick.....	653, 230	\$ 317, 568	541, 010	\$ 262, 441
Ontario.....	7, 199, 970	4, 837, 586	7, 051, 309	4, 656, 528
Saskatchewan.....	163, 824	58, 165	209, 569	61, 740
Alberta.....	40, 393, 061	7, 095, 910	40, 097, 096	7, 134, 006
Northwest Territories.....	1, 500	335	1, 500	335
Canada.....	48, 411, 585	12, 309, 564	47, 900, 484	12, 165, 050

(*) Sold and used by producer.

Table 216.—Production (b) of Natural Gas in Canada, By Months and By Provinces, 1946

Month	New Brunswick	Ontario	Saskatchewan	Alberta	Canada
			(M cu. ft.)		
January.....	65, 555	892, 282	30, 898	4, 175, 474	5, 164, 209
February.....	55, 407	840, 249	27, 737	3, 866, 661	4, 790, 054
March.....	50, 983	645, 978	18, 577	3, 521, 357	4, 236, 395
April.....	52, 211	634, 172	14, 500	2, 999, 697	3, 706, 580
May.....	46, 857	547, 587	12, 274	2, 887, 557	3, 494, 275
June.....	41, 125	432, 577	7, 158	2, 670, 706	3, 151, 566
July.....	31, 819	335, 070	5, 776	2, 542, 053	(a) 2, 915, 218
August.....	26, 511	357, 420	5, 484	2, 604, 943	(a) 2, 994, 858
September.....	33, 142	427, 360	9, 036	2, 787, 977	(a) 3, 258, 015
October.....	37, 678	502, 795	16, 801	3, 438, 832	3, 996, 106
November.....	49, 507	627, 994	25, 880	4, 143, 149	4, 846, 530
December.....	50, 215	807, 825	35, 448	4, 458, 690	5, 352, 178
Total.....	541, 010	7, 051, 309	209, 569	40, 097, 096	47, 900, 484

(a) Includes production from Fort Norman, Northwest Territories.

(b) Sales and consumption by producers.

Table 217.—Production of Natural Gas in Ontario, By Fields, 1945 and 1946

County	Field	1945	1946
		(M cu. ft.)	
Essex.....	Kingsville.....	27, 416	22, 276
	(Tilbury, Romney and Raleigh.....)	2, 125, 982	2, 540, 638
	(Declute.....)	461, 428	134, 814
Kent.....	(Dover.....)	162, 286	296, 757
	(Chatham.....)	297, 978	692, 149
	(Zone.....)	665, 568	
Lambton.....	(Dawn.....)		
	(Oil Springs.....)	421, 320	337, 298
Middlesex.....	(Mosa.....)		
Oxford.....	(South Norwich.....)	90	
Elgin.....	(Brownsville(*).....)		
	(Bayham.....)	30, 036	22, 999
	(Bayham.....)	23, 888	13, 661
Elgin.....	(Malahide.....)	25, 445	45, 437
Norfolk.....	(Norfolk.....)	463, 243	450, 316
Lincoln.....	(Lincoln.....)		
Haldimand.....	(Haldimand.....)	2, 016, 669	2, 022, 637
Wentworth.....	(Wentworth.....)		
Welland.....	(Welland.....)	331, 955	340, 639
Brant.....	(Onondaga, Brantford and Tuscarora.....)	72, 666	65, 188
Prince Edward.....	(Hallowell.....)		
Wells in surface drift.....	(Harwich and Howard Tps.....)	14, 000	6, 500
Private wells.....		60, 000	60, 000
	Total Produced.....	7, 199, 970	7, 051, 309

(*) Dereham Tp.—22,999 M cu. ft.; Bayham Tp.—Nil M cu. ft. 1946.

Dereham Tp.—17,157 M cu. ft.; Bayham Tp.—12,879 M cu. ft. 1945.

Table 218.—Natural Gas Pipeline Mileage in Canada, 1945 and 1946

Province	Actual Miles of Mains				Miles of Equivalent 3' Mains			
	Gathering and transmission		Distribution		Gathering and transmission		Distribution	
	1945	1946	1945	1946	1945	1946	1945	1946
New Brunswick.....	20	20	65	65	36	36	73	73
Ontario.....	2,330	2,352	2,057	2,071	3,922	3,949	2,537	2,417
Saskatchewan.....	2	4	6	8	4	3	4	5
Alberta.....	706	842	656	700	2,287	2,649	1,213	1,168
Canada.....	3,058	3,218	2,784	2,844	6,249	6,637	3,827	3,663

Table 219.—Natural Gas Distribution in Alberta(*), 1945 and 1946

	1945	1946
	(M cu. ft.)	
FIELD DISTRIBUTION FROM TURNER VALLEY FIELD		
Drilling fuel.....	1,426,783	1,110,335
Lease fuel.....	883,351	814,449
Waste.....	6,234,584	5,560,905
Transmission fuel, loss, meter difference.....	170,149	—2,479
To absorption plants (see below).....	28,945,386	28,099,927
Total Turner Valley Field.....	37,660,253	35,583,137
From Foremost field to gas company system.....	198,398	217,042
From Viking and Kinsella fields to Edmonton system.....	8,450,983	8,992,009
From Medicine Hat field to city system.....	2,231,161	2,244,036
To industries.....	1,054,759	867,692
From Redcliff field to domestic services.....	106,177	104,980
To industries.....	1,026,604	1,102,006
From Brooks field to town system.....	81,851	88,719
From Vermilion field to town system.....	169,044	200,259
From Wainwright field to town system.....	245,312	183,839
Miscellaneous services.....	781,637	623,219
Miscellaneous waste.....	285,410	371,731
Total Distribution.....	52,291,559	50,578,669
DISTRIBUTION OF GAS SENT TO ABSORPTION PLANTS—		
To gas company system, except Bow Island repressuring.....	16,008,276	12,239,850
Domestic fuel for Turner Valley.....	351,648	252,731
Plant and equipment fuel.....	2,033,883	2,089,109
Drilling and lease fuel.....	1,710,474	138,542
Industrial fuel—Turney Valley.....	398,959	3,343,837
Repressured—Turner Valley.....	3,044,445	4,409,020
Repressured—Bow Island.....	725,625	920,747
Shrinkage, waste and meter difference.....	4,672,076	4,706,091
Total Gas to Plants.....	28,945,386	28,099,927
Total Utility Market.....	29,643,624	29,837,000

* Information from the Alberta Petroleum and Natural Gas Conservation Board.

Table 220.—Sales(*) of Manufactured and Natural Gas in Canada, 1945 and 1946

	1945			1946		
	Number of customers	Quantity sold	Revenue from sales	Number of customers	Quantity sold	Revenue from sales
		M cu. ft.	\$		M cu. ft.	\$
MANUFACTURED GAS—						
Domestic.....	493,307	12,720,922	13,928,374	504,544	13,773,461	14,892,220
House heating.....	6,217	1,679,796	914,981	6,604	1,760,702	962,255
Industrial.....	3,356	5,109,828	2,996,984	3,687	4,617,662	2,810,862
Commercial.....	29,619	3,893,848	3,429,237	29,199	4,048,811	3,569,418
Miscellaneous.....	114	48,423	49,040	126	35,390	49,667
Total.....	532,613	23,452,817	21,318,616	544,160	24,236,026	22,284,422
NATURAL GAS—						
Domestic.....	194,098	16,875,164	7,975,469	203,941	17,398,813	8,082,941
Industrial.....	1,162	8,375,151	1,930,013	1,196	7,711,571	1,774,132
Commercial.....	11,728	8,276,943	2,164,934	12,646	7,834,497	2,094,600
Miscellaneous.....	482	404,328	36,011	453	241,264	108,540
Total.....	207,470	33,931,586	12,106,427	218,236	33,186,145	12,060,213
Total—All Gas.....	740,083	57,384,403	33,425,043	762,396	57,422,171	34,344,635

(*) Sales by distributing companies to final consumers, amounts used by producers are not included.

Table 221.—Employees, Salaries and Wages, By Provinces, 1945 and 1946

Province	Number of Employees					Salaries	Wages	Total Salaries and Wages
	Administrative and Office		Workmen		Total			
	Male	Female	Male	Female				
1945						\$	\$	\$
New Brunswick.....	10	9	61	2	82	38,545	100,634	139,179
Ontario.....	516	150	571	7	1,244	1,079,495	740,683	1,820,178
Saskatchewan.....	5	1	1	.....	7	7,450	1,521	8,971
Alberta.....	245	65	240	7	557	654,541	370,222	1,024,763
Canada.....	776	225	873	16	1,890	1,780,031	1,213,060	2,993,091
1946								
New Brunswick.....	.....	.....	75	1	76	.....	119,328	119,328
Ontario.....	244	64	743	12	1,063	494,547	1,079,758	1,574,305
Saskatchewan.....	3	.....	2	.....	5	2,944	2,447	5,391
Alberta.....	104	5	397	5	511	217,734	574,603	792,337
Canada.....	351	69	1,217	18	1,655	715,225	1,776,136	2,491,361

Table 222.—Workmen, By Months, 1945 and 1946 (On the last work-day of each month)

Month	1945			1946		
	Male	Female	Total	Male	Female	Total
January.....	644	9	653	827	14	841
February.....	652	11	663	795	14	809
March.....	677	13	690	878	15	893
April.....	731	10	741	1,066	16	1,082
May.....	857	17	874	1,285	16	1,301
June.....	954	16	970	1,384	16	1,400
July.....	996	19	1,015	1,479	17	1,496
August.....	1,023	20	1,043	1,543	16	1,559
September.....	1,048	16	1,064	1,408	19	1,427
October.....	1,044	18	1,062	1,390	18	1,408
November.....	941	12	953	1,328	15	1,343
December.....	835	12	847	1,111	15	1,126
Average.....	873	16	889	1,217	18	1,235

Table 223.—Natural Gas Wells in Ontario, By Townships, 1946

Township	1946					
	No. of producing wells in operation Dec. 31, 1945	Idle during year	No. of wells abandoned this year	No. of dry wells drilled this year	No. of producing wells drilled this year	No. of producing wells in operation Dec. 31, 1946
Aldborough.....				4		
Anderson.....						
Bayham.....	34	4	1			33
Bertie.....	172	4	3	4	10	179
Beverly.....			1			
Binbrook.....	42	4			4	44
Brant.....			7			
Brantford.....	2					2
Brooke.....						
Caistor.....	84	1	2	1	9	90
Camden Gore.....		2		1	12	13
Canboro.....	147	4	2	8	9	152
Cayuga North.....	216	3	12	14	26	233
Cayuga South.....	88	8		1	4	87
Charlotteville.....	15			3		15
Chatham.....	24	3		4	1	23
Crowland.....	30			1	5	35
Culross.....						
Dawn.....	30	1				30
Delaware.....						
Delhi Village.....	3					3
Dereham.....	2	10			2	2
Dorchester North.....						
Dover.....	16		3			14
Dover East.....						
Dunn.....	53	5		9	23	73
Dunwich.....						
Enniskillen.....	3	1		2		3
Gainsboro.....	13	2				11
Glanford.....	10					10
Gosfield South.....	24	3				24
Hallowell.....						
Harwich.....				1		
Hobson.....						
Houghton.....	4					4
Humberstone.....	72		2		10	81
Maidstone.....				1		
Malahide.....	22		12	1	5	15
Malden.....		2		3	2	
Marysburg.....						
Mersea.....			2			3
Middleton.....	35	4		1		35
Mosa.....						
Moulton.....	105		2	1		103
Nassageva.....						
Norwich South.....	1		1	1		1
Nottawasaga.....						
Oneida.....	118	5	8	8	10	118
Onondaga.....	20	5	4			14
Orford.....				2		
Oxford North.....						
Oxford West.....						
Port Dover Village.....						3
Port Rowan.....	3					4
Rainham.....	299	11	10	1	18	307
Raleigh.....	53	5		2	2	56
Romney.....	134	2	4	1		132
Sarnia.....						
Seneca.....	149	10	6	5	2	141
Sherbrooke.....	16	1	1		1	16
Sombra.....		6			6	
Stamford.....					5	5
Thorold.....					3	3
Tilbury East.....	118	1	3	2		115
Townsend.....	62	3	2	11	6	64
Tuscarora.....	67		12		1	56
Wainfleet.....	41		2		2	41
Walpole.....	560	14	15	18	24	560
Walsingham North.....	8			4	6	14
Walsingham South.....	15			5		15
Westminster.....						
Willoughby.....	51		1	3	4	54
Windham.....	21			1		21
Woodhouse.....	94	5	1	2	2	92
Yarmouth.....				1	1	1
Zone.....	32		1	3	8	41
Private wells.....	320					320
Surface drift wells.....	69					69
Total.....	3,504	129	120	129	221	3,580

THE PETROLEUM INDUSTRY IN CANADA

Including (1) Production of Crude Petroleum; and (2) Petroleum Products

(1) Production of Crude Petroleum

Production of crude petroleum and natural gasoline in Canada during 1946 totalled 7,585,555 barrels valued at \$14,989,052, compared with 8,482,796 barrels worth \$13,632,248 in 1945, a decrease of 10.6 per cent in quantity and an increase of 10 per cent in value. The highest recorded production was in 1942 when the 2,253 wells yielded 10,364,796 barrels of crude oil.

Alberta accounted for 94 per cent of the total for Canada in 1946, but output in this province at 7,137,921 barrels was 11.8 per cent lower than in the previous year. There was a further decline in output, from the Turner Valley field, but other Alberta fields, except Vermilion, showed increases with Taber, Conrad and Lloydminster areas having the largest proportional gains.

In Saskatchewan, the production was 118,686 barrels compared with 14,374 in 1945, the first year of recorded production. All of this oil came from the Lloydminster district.

Ontario showed only a slight increase in the quantity yielded in 1946, the output amounting to 123,082 barrels compared with 113,325 barrels in the preceding year.

In the Northwest Territories production dropped to 177,282 barrels in 1946 from 345,171 barrels in 1945. A decrease was also recorded in New Brunswick with production at 28,584 barrels compared with 30,140 barrels in 1945.

In 1946 the crude petroleum industry employed an average of 1,563 persons and distributed \$3,260,571 in salaries and wages. About \$914,551 were spent for fuel and electricity and \$109,555 for process supplies. Sales by the industry including some natural gas, were valued at \$14,725,139. Reports were received from 2,314 wells which were in operation during the year.

Imports of crude petroleum into Canada totalled 63,406,461 barrels in 1946 compared with 58,506,232 barrels in 1945. The supply came from the following countries: United States 38,011,326 barrels; Venezuela 20,954,422 barrels; Colombia, 4,265,342 barrels, and Trinidad 175,371 barrels.

Table 224.—Principal Statistics for the Crude Petroleum Industry in Canada, 1937-1946

Year	Number of operating wells	Number of employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies	Gross value of sales (*)
			\$	\$	\$	\$
1937.....	2,328	1,620	2,340,359	471,187	638,779	6,002,638
1938.....	2,400	1,894	2,656,112	338,780	802,982	10,127,833
1939.....	2,389	1,780	2,567,983	707,067	724,988	10,742,977
1940.....	2,360	1,741	2,835,410	934,834	533,161	11,486,078
1941.....	2,312	1,844	3,254,817	609,616	194,182	15,011,324
1942.....	2,253	1,972	3,648,965	971,504	235,959	16,876,123
1943.....	2,197	2,399	5,212,895	709,879	202,479	16,906,780
1944.....	2,264	2,547	5,814,676	1,000,484	242,311	15,818,358
1945.....	2,222	1,968	3,898,662	748,351	117,708	14,121,921
1946.....	2,314	1,563	3,260,571	914,551	109,555	14,725,139

(*) Includes some natural gas sold by the industry.

Table 225.—Principal Statistics for the Crude Petroleum Industry, by Provinces, 1946 (a)

	Ontario	Saskatchewan	Alberta	Northwest Territories	Canada
Number of firms.....	123	3	113	1	240
Number of active wells (b).....	1,629	18	582	58	(c) 2,314
Number of employees—Administrative.....	9	.....	394	2	405
Workmen.....	157	3	978	20	1,158
Total.....	166	3	1,372	22	1,563
Salaries and wages—Salaries..... \$	13,417	.....	971,266	6,000	990,683
Wages..... \$	157,110	5,512	2,042,950	64,316	2,269,888
Total..... \$	170,527	5,512	3,014,216	70,316	3,260,571
Selling value of products (gross)..... \$	291,719	135,990	14,124,038	173,392	14,725,139
Cost of fuel and electricity..... \$	40,635	8,222	865,694	.....	914,551
Cost of process supplies used..... \$	44,191	71	65,293	.....	109,555
Selling value of products (net)..... \$	206,893	127,697	13,193,051	173,392	13,701,033

(a) Data for New Brunswick are included in the Natural Gas Industry.

(b) Includes wells still drilling and dry wells completed in year specified.

(c) Includes 27 in New Brunswick.

Table 226.—Production of Crude Petroleum in Canada, by Fields, 1945 and 1946

	1945		1946	
	Barrels	Total Value	Barrels	Total Value
New Brunswick.....	30,140	\$ 42,413	28,584	\$ 40,018
ONTARIO—				
Petrolia and Enniskillen.....	39,350	92,072	44,323	103,745
Oil Springs.....	25,657	63,350	27,995	69,151
Moore township.....	247	578	259	606
Sarnia township.....	190	445	152	357
Plympton township.....	9	21	28	66
Bothwell township and Thamesville.....	22,791	53,327	18,610	43,560
West Dover, Romney, Raleigh and Tilbury East.....	5,935	13,887	4,671	10,933
Onondaga.....	24	56	89	208
Mosa township.....	14,344	33,562	17,351	40,613
Dunwich.....	1,677	3,924	1,620	3,792
Dawn and Euphemia.....	362	847	237	555
Warwick, Metcalfe and Adelaide townships.....	2,739	6,409	7,747	18,133
Total Ontario.....	113,325	268,478	123,082	291,719
Saskatchewan.....	14,374	15,362	118,686	135,990
ALBERTA—				
Turner Valley.....	7,422,061	11,875,293	6,371,572	12,806,860
Other fields.....	557,725	1,294,394	766,349	1,541,073
Total Alberta.....	7,979,786	13,169,692	7,137,921	14,347,933
Northwest Territories.....	345,171	136,303	177,282	173,392
Canada.....	8,482,796	13,632,248	7,585,555	14,989,052

Table 227.—Production of Crude Petroleum in Canada, by Provinces, 1926-1946

Year	New Brunswick	Ontario	Saskatchewan	Alberta	Northwest Territories	Canada
(Barrels of 35 Imperial gallons)						
1926.....	10,544	137,850	.....	216,050	.....	364,444
1927.....	18,244	139,606	.....	318,741	.....	476,591
1928.....	8,043	134,094	.....	482,047	.....	624,184
1929.....	7,499	121,194	.....	988,675	.....	1,117,368
1930.....	6,758	117,302	.....	1,398,160	.....	1,522,220
1931.....	6,577	122,365	.....	1,413,631	.....	1,542,573
1932.....	6,408	130,343	.....	906,751	910	1,044,412
1933.....	8,855	136,053	.....	995,832	4,608	1,145,333
1934.....	11,106	141,335	.....	1,253,966	4,438	1,410,895
1935.....	12,954	165,041	.....	1,263,510	5,115	1,446,620
1936.....	17,112	165,495	.....	1,312,368	6,399	1,500,374
1937.....	18,089	165,205	.....	2,749,085	11,371	2,943,750
1938.....	19,276	172,641	.....	6,751,312	22,855	6,966,084
1939.....	22,799	206,379	.....	7,576,932	20,191	7,826,301
1940.....	22,167	187,644	331	8,362,203	18,633	8,590,978
1941.....	31,359	160,238	.....	9,918,577	23,664	10,133,838
1942.....	28,089	143,845	.....	10,117,073	75,789	10,364,796
1943.....	24,530	132,402	.....	9,601,530	293,750	10,052,302
1944.....	23,296	125,067	.....	8,727,366	1,223,675	10,099,404
1945.....	30,140	113,325	14,374	7,979,786	345,171	8,482,796
1946.....	28,584	123,082	118,686	7,137,921	177,282	7,585,555

Table 228.—Production of Crude Petroleum in Canada, by Months, 1946 (Barrel—35 Imperial Gallons)

Month	(*)New Brunswick	Ontario	Saskatchewan	Alberta(*)	(*)North-west Territories	Canada	
						1946	1945
	(Barrels)						
January.....	2,294	10,544	4,273	659,326	1,981	678,418	872,930
February.....	1,966	9,446	3,341	592,110	1,717	608,580	770,975
March.....	2,220	9,016	4,007	642,943	3,489	661,675	771,674
April.....	2,183	10,417	7,886	601,707	20,433	642,626	685,903
May.....	2,804	10,988	9,894	598,183	26,196	648,065	708,633
June.....	2,586	9,578	7,524	581,874	18,626	620,188	666,103
July.....	2,633	10,459	6,598	591,392	21,832	632,914	689,698
August.....	2,602	10,353	6,415	575,234	26,934	621,538	678,123
September.....	2,286	10,577	18,410	567,323	24,604	623,200	650,612
October.....	2,497	11,642	18,160	584,614	20,515	637,428	675,918
November.....	2,384	9,855	19,701	577,523	8,630	618,093	652,081
December.....	2,129	10,207	12,477	565,692	2,325	592,830	660,146
Total.....	28,584	123,082	118,686	7,137,921	177,282	7,585,555	8,482,796

(*) These figures include total output each month.

Table 229.—Petroleum Wells in Canada, by Provinces, 1944-1946

—	New Brunswick	Ontario	Saskatchewan	Alberta	Northwest Territories	Canada
Productive wells at beginning of year.....1944.....	22	1,728	.....	365	26	2,141
.....1945.....	23	1,690	.....	426	57	2,196
.....1946.....	26	1,579	3	479	58	2,145
Number of productive wells drilled.....1944.....	1	6	.....	81	32	120
.....1945.....	3	5	3	66	1	78
.....1946.....	1	26	18	49	.....	94
Number of wells abandoned.....1944.....	.....	47	.....	19	1	67
.....1945.....	.....	1,022	.....	13	.....	1,035
.....1946.....	.....	34	3	11	.....	48
Number of dry wells drilled.....1944.....	.....	18	.....	41	.....	59
.....1945.....	.....	19	.....	42	.....	61
.....1946.....	.....	42	.....	51	.....	93
Number of productive wells in operation at end of year.....1944.....	23	1,690	.....	426	57	2,196
.....1945.....	26	1,579	3	479	58	2,145
.....1946.....	27	1,610	18	517	58	2,230

Table 230.—Employees, Salaries and Wages in the Crude Petroleum Industry, 1941-1946

Year	Number of Employees					Salaries	Wages	Total Salaries and Wages
	On Salaries		On Wages		Total Employees			
	Male	Female	Male	Female				
						\$	\$	\$
1941.....	356	60	1,428	.....	1,844	867,638	2,387,179	3,254,817
1942.....	371	113	1,483	5	1,972	997,609	2,651,356	3,648,965
1943.....	496	155	1,736	12	2,399	1,547,605	3,665,290	5,212,895
1944.....	641	238	1,646	22	2,547	2,050,411	3,764,265	5,814,676
1945.....	643	191	1,107	27	1,968	1,606,820	2,291,842	3,898,662
—	Administration		Workmen		Total	Administrators Earnings	Workmen's Earnings	Total Earnings
	Male	Female	Male	Female				
						\$	\$	\$
1946.....	324	81	1,141	17	1,563	990,683	2,269,888	3,260,571

Table 231.—Workmen, by Months, 1945 and 1946 (Number on pay-roll on the last work day of each month)

Month	1945			1946		
	Male	Female	Total	Male	Female	Total
January.....	1,042	23	1,065	1,127	22	1,149
February.....	1,034	25	1,059	1,103	22	1,125
March.....	1,075	25	1,100	991	18	1,009
April.....	1,022	25	1,048	1,103	18	1,121
May.....	1,044	22	1,066	1,148	18	1,166
June.....	1,107	21	1,128	1,171	19	1,190
July.....	1,132	25	1,157	1,222	16	1,238
August.....	1,211	27	1,238	1,167	15	1,182
September.....	1,113	26	1,139	1,154	13	1,167
October.....	1,093	26	1,119	1,120	12	1,132
November.....	1,042	19	1,061	1,078	12	1,090
December.....	1,024	20	1,044	1,034	12	1,046
Average.....	1,107	27	1,134	1,141	17	1,158

Table 232.—Imports Into Canada of Petroleum, Asphalt and Their Products, 1945 and 1946

Item	1945		1946	
	Quantity	Value	Quantity	Value
Asphaltum or asphalt, solid or not.....cwt.	128,418	\$ 326,313	165,604	\$ 435,612
Oil, imported by miners or mining companies, for the concentration of ores or metals.....gal.	142,866	91,017	102,636	64,316
Crude petroleum for refining .8155 specific gravity (42.0 A.P.I.) or heavier at 60° Fah.....M gal.	1,987,943	72,310,214	2,218,963	89,471,006
Crude petroleum for refining, lighter than .8155 specific gravity (42.0 A.P.I.) at 60° Fah.....gal.	275,138	10,480	298,840	11,568
Fuel oil, ex-warehoused, for ships' stores.....gal.	35,395,731	1,288,061	12,922,344	510,715
Coal oil and kerosene lighter than .8236 specific gravity at 60° Fah, n.o.p.....gal.	13,039,459	801,575	35,557,549	2,280,149
Engine distillate .8017 specific gravity or heavier at 60° Fah.....gal.	356,012	23,388	2,174,540	148,854
Gasoline, lighter than .8236 specific gravity at 60° Fah.....gal.	49,352,979	7,764,143	118,718,873	11,513,890
Natural casinghead, compression or absorption gasoline lighter than .6690 specific gravity (80.0 A.P.I.) at 60° Fah, when imported by refiners of crude petroleum for blending with gasoline wholly produced in Canada.....gal.	29,197,565	1,807,271	57,939,488	3,397,891
Lubricating oils, composed wholly or in part of petroleum and costing less than 25 cents per gallon.....gal.	4,551,635	760,431	4,564,681	724,267
Lubricating oils, n.o.p.....gal.	5,904,265	2,863,674	6,348,330	3,015,856
Oils, mineral, n.o.p.....gal.	3,840,662	1,677,124	697,708	815,655
Imports of petroleum n.o.p., .8236 specific gravity (40.3 A.P.I.) or heavier at 60° Fah.....gal.	53,350,962	2,164,781	109,544,452	4,880,869
Petroleum greases and lubricating greases, n.o.p.....lb.	10,500,345	640,800	9,928,228	690,328
Refined petroleum jellies and oils for toilet, medicinal, edible or similar purposes.....lb.	491,631	401,631	659,989	659,989
Paraffin wax.....lb.	18,544,302	1,114,356	21,529,806	1,348,861
Paraffin wax candles.....lb.	169,966	44,163	322,264	86,262
Products of petroleum n.o.p., lighter than .8236 specific gravity at 60° Fah.....gal.	1,482,657	190,069	17,373,015	1,642,024
Liquefied petroleum gases.....cwt.		685,964		2,044,813

Table 233.—Exports of Petroleum and its Products from Canada, 1945 and 1946

Item	1945		1946	
	Quantity	Value	Quantity	Value
Petroleum, crude.....gal.		\$		\$
Oil, coal and kerosene, refined.....gal.	6,604,122	703,719	2,980,079	317,747
Gasoline and naphtha.....gal.	56,824,754	8,255,473	10,080,980	1,274,678
Fuel oil.....gal.	32,615,854	1,925,593	20,277,614	1,283,060
Lubricating oil.....gal.	947,089	287,699	4,473,824	1,111,214
Oil, mineral, n.o.p.....gal.	143,838	32,021	211,976	52,396
Wax, mineral.....cwt.	18,295	47,943	127,133	583,243

(2) The Petroleum Products Industry

Statistics for the Petroleum Products Industry cover all establishments in Canada which were occupied chiefly in (a) the refining of crude oil to produce gasoline, fuel oil, etc., and (b) the blending or compounding of lubricating oils and greases.

Thirty refineries and 13 blending plants, or a total of 43 works, reported under this category in 1946 and the aggregate value of production was \$223,425,380, an increase of 10.8 per cent over the 1945 total of \$201,683,679.

Output figures for 1946 included \$221,702,376 for petroleum refineries and \$1,723,004 for concerns engaged in blending oils and greases, against corresponding totals in 1945 of \$200,233,529 and \$1,450,150, respectively. The principal statistics for each of these groups and for the industry as a whole are tabulated below.

Table 234.—Materials Used in Petroleum Refineries, 1945 and 1946

Material	Unit of measure	1945		1946	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Crude oil (under 60° A.P.I.) in its natural state, from Canadian wells.....	Imp. gal.	261,649,701	14,448,892	236,210,031	15,366,821
Absorption gasoline, etc., from Canadian wells (run to stills).....	Imp. gal.	11,460,721	666,550	14,356,179	827,399
Crude oil, in its natural state, imported, (run to stills).....					
(a) From United States.....	Imp. gal.	1,116,775,550	67,573,181	1,351,879,093	83,182,316
(b) From Other Countries.....	Imp. gal.	915,009,313	55,323,332	874,210,116	44,830,178
Crude oil, not in its natural state (run to stills).....	Imp. gal.			1,700,073	87,066
Benzol for blending.....	Imp. gal.	2,891,487	431,981	2,256,556	325,420
Sulphuric acid, 66° Be.....	pound	1,007,329	141,610	754,004	101,276
Sulphur.....	pound	39,989,522	437,370	38,480,882	408,145
Caustic soda.....	pound	102,958	2,659	135,379	3,361
Soda ash.....	pound	8,503,517	235,011	7,545,781	225,798
Litharge.....	pound	510,755	11,742	432,463	9,786
Fuller's earth, bentonite and other clays.....	pound	246,523	21,325	351,612	30,030
Compounding materials.....	pound	28,604,000	685,761	25,626,000	570,909
Tetraethyl fluid.....	c.c.	2,002,251,865	362,323		484,218
Blending stocks for aviation gas.....	Imp. gal.	11,192,158	4,243,451	2,779,052,387	4,154,307
Other materials.....			3,515,960	10,065,617	1,486,496
Shipping containers.....			1,434,642		1,793,720
			599,329		987,437
Total.....			150,185,119		154,714,683

Table 235.—Products Made in Petroleum Refineries, 1945 and 1946

Product	Unit of measure	1945		1946	
		Quantity	Gross selling value at works	Quantity	Gross selling value at works
			\$		\$
MADE FOR SALE—					
Gasoline (1) Straight run—Aviation.....	Imp. gal.	19,174,916	3,681,285	7,996,196	1,382,490
Standard.....	Imp. gal.	447,191,539	50,994,481	514,458,339	59,536,928
By cracking (2) Aviation.....	Imp. gal.				
Standard.....	Imp. gal.	486,436,530	56,060,726	494,882,046	56,558,859
Stove oil (40°-42.5° A.P.I.).....	Imp. gal.	39,408,805	2,401,840	88,212,202	5,968,044
Gas and light fuel oil (20°-40° A.P.I., except diesel).....	Imp. gal.	126,893,270	8,038,426	189,547,916	11,928,836
Diesel fuel oil (all fuel oil sold under this name).....	Imp. gal.	116,571,599	6,515,379	129,490,547	7,742,974
Residual fuel oil (10°-20° A.P.I.).....	Imp. gal.	538,971,718	26,036,188	538,391,794	27,661,201
Tractor and engine distillate.....	Imp. gal.	36,965,460	3,511,911	37,576,831	4,009,401
V.M. and P. or solvent naphtha.....	Imp. gal.	27,682,130	3,287,078	24,735,599	3,409,599
Kerosene.....	Imp. gal.	33,321,509	3,824,092	30,197,702	3,319,742
Lubricating oil.....	Imp. gal.	50,018,247	11,804,974	54,958,798	13,761,569
Lubricating grease.....	pound	19,035,906	850,874	22,112,219	991,334
Asphalt.....	Imp. gal.	69,247,333	6,092,110	91,334,563	8,099,694
Petroleum coke.....	ton	59,559	472,933	65,443	343,761
Other products (3).....			8,457,745		7,481,192
Total—Made for Sale.....			192,090,042		212,495,624
MADE FOR OWN USE—					
Gasoline—Straight run.....	Imp. gal.	191,255	45,891	243,343	52,057
By cracking process.....	Imp. gal.	22,715	3,430	40,779	5,570
Stove oil.....	Imp. gal.	1,795	92	9,354	520
Gas and light fuel oil (20°-40° A.P.I.).....	Imp. gal.	112,012	5,289	69,830	4,327
Diesel fuel oil.....	Imp. gal.	124,359	6,887	475,627	31,977
Residual fuel oil (10°-20° A.P.I.).....	Imp. gal.	105,210,613	4,824,466	107,126,092	5,077,023
Tractor and engine distillate.....	Imp. gal.	1,135	71		
Kerosene.....	Imp. gal.	52,898	6,020	45,692	5,104
Lubricating oil.....	Imp. gal.	64,848	14,826	128,895	29,721
Asphalt.....	Imp. gal.	55,519	4,917	60,178	5,315
Petroleum coke.....	ton	7,260	36,269	4,172	19,345
Still gas.....	M cu. ft.	8,974,774	2,947,947	10,032,080	3,690,804
Other products.....			247,382		284,089
Total—Made for own use.....			8,143,487		9,206,752
Grand Total.....			200,233,529		221,702,376

(1) Includes recoveries from Turner Valley naphtha and natural gasoline run to refinery stills but does not include the imported casinghead gasoline which was used for blending at the refineries.

(2) Includes polymer gasoline.

(3) Includes wax, candles, still gas for sale, butane, propane, cumene, etc. These items were reported by fewer than three companies, so, in accordance with the provisions of the Statistics Act, the figures cannot be shown separately.

Table 236.—Materials Used in Lubricating Oils and Greases Industry, 1945 and 1946

Material	Unit of measure	1945		1946	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Compounding stocks (oils, etc.).....	Imp. gal.	1,536,850	589,430	1,871,150	685,834
Tallow and grease.....	lb.	137,817	16,871	285,042	18,241
All other materials.....			155,194		136,053
Shipping containers.....			206,815		263,933
Total.....			968,310		1,104,061

Table 237.—Products Made in the Lubricating Oils and Greases Industry, 1945 and 1946

Product	Unit of Measure	1945		1946	
		Quantity	Gross selling value at works	Quantity	Gross selling value at works
			\$		\$
Greases, lubricating.....	pound	1,117,561	157,910	899,087	124,057
Oils, lubricating.....	gallon	1,350,684	1,157,577	1,632,577	1,375,869
Soaps and powders.....			42,039		60,023
All other products.....			92,624		163,055
Total.....			1,450,150		1,723,004

CHAPTER EIGHT

THE NON-METALLIC MINING INDUSTRIES IN CANADA. (Other than Fuels)

Including detailed data relating to operations in the following industries:—

Asbestos	Miscellaneous	Magnesitic dolomite
Feldspar, Nepheline	Barite	Magnesium sulphate
Syenite and Quartz	Corundum	Mineral waters (natural)
Gypsum	Diamonds	Phosphate
Iron oxides (ochre)	Diatomite	Silica Brick
Mica	Fluorspar	Sodium carbonate
Peat fuel	Garnet	Sodium sulphate
Peat moss	Graphite	Strontium minerals
Salt	Grindstones, etc.	Sulphur (Pyrite)
Talc and soapstone	Lithium minerals	Volcanic dust

THE ASBESTOS MINING INDUSTRY

Asbestos production (shipments) in Canada during 1946 totalled 558,181 short tons valued at \$25,240,562, compared with 466,896 tons worth \$22,805,157 in 1945. Except for a few tons from Ontario, all the production came from Quebec.

The 11 firms engaged in asbestos mining during 1946 employed 4,547 persons who were paid \$7,771,921 in wages and salaries. Expenditures for fuel and electricity amounted to \$1,759,462, and process supplies, plus containers, cost \$3,236,430. In addition, the industry paid \$3,283,055 in taxes in 1946 and spent \$2,279,382 on new equipment or plant extensions.

Shipments of asbestos in 1946 included 742 tons of crude at \$334,925; 228,234 tons of fibres worth \$17,181,400 and 329,205 tons of shorts valued at \$7,724,237.

The major portion of the Canadian production was exported. During the year under review, the exports included 639 tons of crude valued at \$293,901, 215,233 tons of milled fibres worth \$16,215,579, and 304,312 tons of refuse and shorts valued at \$7,329,708.

The following statement concerning asbestos mining in Canada has been abstracted from a review prepared by the Bureau of Mines, Ottawa:

"Asbestos of commerce consists mostly of the three varieties known as chrysotile, amosite, and crocidolite or blue asbestos, chrysotile being by far the most important and most widely used. Three other varieties, namely fibrous actinolite, fibrous tremolite, and anthophyllite, have only a limited field of usefulness.

"The asbestos produced in Canada is practically all of the chrysotile variety and comes almost entirely from areas of serpentinized rock in the Eastern Townships, Quebec, where the producing centres are Thetford Mines, Black Lake, East Broughton, Vimy Ridge, Asbestos and St. Remi de Tingwick. The Canadian deposits are the largest known in the world.

"Small deposits of chrysotile asbestos are known in other parts of Quebec and also in Ontario and British Columbia, and several of them have been worked from time to time. The asbestos from some of these deposits has a very low content of iron and is entirely free from magnesite, and should be suitable for use in making insulation for electrical machinery.

"No amosite or crocidolite has been found in Canada, but there are numerous deposits of fibrous tremolite, fibrous actinolite, and anthophyllite, which varieties are commercially termed amphibole asbestos. The fibres of these varieties are harsher and weaker than those of chrysotile and there is little demand for them at present. None of these deposits is being worked, although formerly fibrous actinolite was quarried near the village of Actinolite, Hastings County, Ontario, for use in the making of roofing materials. Asbestos deposits reported as having been found in recent years in Manitoba and in northern and western Ontario are of the amphibole varieties. The amphibole fibres are too harsh and brittle to be spun, but they have a higher resistance to

acids than has chrysotile, and it is possible that material from some of the deposits is suitable for use in acid filters and for other purposes where long harsh fibres are required.

"Production has been continuous from the Thetford area since 1878 and reserves of asbestos-bearing rock are huge. Core-drilling to depths greater than 1,700 feet has revealed the presence of fibre comparable in quantity and quality with that in the present workings. Most of the output consists of vein fibre obtained from veins $\frac{1}{4}$ to $\frac{1}{2}$ inch in width, though veins exceeding 5 inches in width occur. The fibres run crosswise of the vein and thus the width of the vein determines the length of fibre. Slip fibre, occurring in fault planes, is obtained largely in the East Broughton area.

"The asbestos-bearing rock is mined in open pits and underground. The block-caving method of underground mining is coming into general use. This method was put into operation at the King mine of Asbestos Corporation in 1934. Johnson's Company is now using the same method, and Bell Asbestos Mines and Canadian Johns-Manville are sinking shafts preparatory to recovering rock by block-caving operations.

"Asbestos is used for a great variety of purposes, the principal products being: cloth, brake linings, clutch facings, packings, insulation, mill-board, siding, shingles, roofing, tile and pipes."

Price quotations, November 1946, on asbestos show variations depending on grade: crude No. 1, \$800 per ton; crude No. 2 and crude run-of-mine, \$275 to \$495; spinning or textile fibre, \$155 to \$286; shingle fibre, \$75 to \$102; paper fibre, \$52 to \$59; waste, stucco or plaster, \$39; refuse or shorts, \$17 to \$34.

Table 238.—Principal Statistics of the Asbestos Mining Industry in Canada, 1944-1946

	1944	1945	1946
Number of firms.....	9	11	11
Number of employees: Administrative.....	354	429	465
Workmen.....	3,696	3,808	4,082
Total.....	4,050	4,237	4,547
Salaries and wages: Salaries.....	\$ 805,330	\$ 820,164	\$ 998,539
Wages.....	\$ 5,595,855	\$ 5,859,721	\$ 6,773,382
Total.....	\$ 6,401,185	\$ 6,679,885	\$ 7,771,921
Selling value of products (a).....	\$ 21,836,376	\$ 24,092,799	\$ 25,245,579
Cost of purchased fuel and electricity.....	\$ 1,635,829	\$ 1,684,017	\$ 1,759,462
Cost of process supplies (b).....	\$ 1,166,909	\$ 1,267,960	\$ 1,670,496
Cost of containers.....	\$ 1,213,321	\$ 1,283,748	\$ 1,545,934
Net value of sales.....	\$ 17,820,317	\$ 19,857,074	\$ 20,269,687

(a) Includes value of sand and gravel.

(b) Explosives, drill steel, etc.

Table 239.—Shipments of Asbestos by Canadian Mines, by Grades, 1944-1946

	1944		1945		1946	
	Tons	\$	Tons	\$	Tons	\$
Crudes.....	1,547	621,956	981	415,203	742	334,925
Fibres.....	190,233	14,305,966	219,767	16,628,467	228,234	17,181,400
Shorts.....	227,485	5,691,594	246,148	5,761,487	329,205	7,724,237
Total.....	419,265	20,619,516	466,896	22,805,157	558,181	25,240,562
Sand, gravel and stone (waste rock only) (*)..	4,521	3,539	5,109	3,894	6,337	5,017

(*) This production is included under the Sand and Gravel Industry.

Table 240.—Shipments of Asbestos by Canadian Mines, 1927-1946

Year	Tons	Selling value at works	Year	Tons	Selling value at works
		\$			\$
1927.....	274,778	10,621,013	1937.....	410,026	14,505,791
1928.....	273,033	11,238,360	1938.....	289,793	12,890,195
1929.....	306,055	13,172,581	1939.....	364,472	15,859,212
1930.....	242,114	8,390,163	1940.....	346,805	15,619,865
1931.....	164,296	4,812,886	1941.....	477,846	21,468,840
1932.....	122,977	3,039,721	1942.....	439,459	22,663,233
1933.....	158,367	5,211,177	1943.....	467,196	23,169,505
1934.....	155,980	4,936,326	1944.....	419,265	20,619,516
1935.....	210,467	7,054,614	1945.....	466,896	22,805,157
1936.....	301,287	9,958,183	1946.....	558,181	25,240,562

Table 241.—Tonnage of Asbestos Rock Mined and Milled, 1944-1946

	1944	1945	1946
	Tons	Tons	Tons
Rock mined.....	7,778,805	8,765,370	9,127,859
Rock milled.....	6,587,740	6,459,813	7,027,483

Table 242.—Shipments of Asbestos by Canadian Mine, by Months, 1946

Month	Short tons	Month	Short tons
January.....	36,576	August.....	53,783
February.....	29,666	September.....	51,182
March.....	36,369	October.....	55,769
April.....	47,685	November.....	52,400
May.....	52,927	December.....	48,573
June.....	47,437	Total.....	558,181
July.....	45,814		

Table 243.—Number of Workmen, by Months, 1945 and 1946 (Administration and Office Employees not Included)

Month	Mine			Mill	
	Surface		Underground	Male	Female
	Male	Female	Male		
1945					
January.....	1,550	32	447	1,696	2
February.....	1,538	31	465	1,671	2
March.....	1,523	30	468	1,675	2
April.....	1,525	29	471	1,666	2
May.....	1,558	32	459	1,687	2
June.....	1,585	31	442	1,666	2
July.....	1,670	34	450	1,684	2
August.....	1,704	25	440	1,690	2
September.....	1,709	33	486	1,670	2
October.....	1,754	30	484	1,685	2
November.....	1,803	27	456	1,721	2
December.....	1,759	28	420	1,682	2
Average.....	1,643	31	457	1,675	2
1946					
January.....	1,718	25	458	1,688	2
February.....	1,684	19	461	1,729	2
March.....	1,755	26	448	1,755	2
April.....	1,856	26	453	1,766	2
May.....	1,948	23	433	1,749	2
June.....	1,944	24	439	1,761	2
July.....	1,863	26	452	1,795	2
August.....	1,893	27	438	1,836	2
September.....	1,823	20	428	1,855	2
October.....	1,836	27	412	1,865	2
November.....	1,823	29	414	1,892	2
December.....	1,771	25	396	1,845	2
Average.....	1,826	25	435	1,794	2

Table 244.—Taxes Paid by the Asbestos Mining Industry, 1945 and 1946

	1945	1946
	\$	\$
Dominion income tax, including tax on non-operating revenue.....	1,361,816	1,677,219
Dominion excess profits tax.....	1,602,577	1,039,846
Provincial taxes—		
Mining taxes paid on net profits from production, including portion paid to municipality.....	288,303	374,992
Corporation income tax where levied in addition to mining tax.....	2,557	193
Taxes paid on capital and places of business.....	372	133
Acreage taxes.....		
Total Provincial.....	291,232	375,318
Municipal taxes—		
Based on property valuation.....	198,270	190,651
Based on non-operating revenue.....		21
Total Municipal.....	198,270	190,672
Grand Total Taxes Paid.....	3,453,895	3,283,055

Table 245.—Specified Miscellaneous Expenditures by the Asbestos Mining Industry, 1944-1946

	1944	1945	1946
	\$	\$	\$
Workmen's compensation.....	305,290	384,536	450,248
Unemployment insurance.....	63,917	51,254	55,237
Aggregate cost of all supplies purchased.....	3,271,141	4,076,750	4,557,898
Aggregate cost of plant and equipment purchased.....	294,889	934,294	2,279,382
Cost of buildings, machinery and equipment erected or installed during the year.....	553,273	1,361,763	2,635,758

Table 246.—Imports Into Canada and Exports of Asbestos and Asbestos Products, 1945 and 1946

	1945		1946	
	Tons	\$	Tons	\$
IMPORTS				
Asbestos clutch facings for automobiles, motor vehicles and chassis.....		316,461		179,480
Asbestos brake linings for automobiles, motor vehicles and chassis.....		379,038		444,409
Asbestos brake linings and clutch facings, n.o.p.....		32,005		47,296
Asbestos in any form other than crude, and all manufactures of, n.o.p.....		1,385,224		1,434,680
Asbestos packing.....	108	101,615	113	124,146
Total.....		2,214,343		2,230,011
EXPORTS				
Asbestos (crude).....	863	366,563	639	293,901
Asbestos milled fibres.....	209,765	15,857,555	215,233	16,215,579
Asbestos waste, refuse and shorts.....	229,929	5,618,124	304,312	7,329,708
Asbestos manufactures, including asbestos roofing.....		341,648		634,230
Total.....		23,183,890		24,473,418

THE FELDSPAR AND QUARTZ MINING INDUSTRY

Owing to the very close physical association of these minerals in many Canadian deposits (pegmatites), it has been found difficult for some operators to make a separation of all data pertaining to the mining of each individual mineral and, for this reason, the general statistics relating to capital, employment, fuel and electricity, etc., have been combined in this report. Since 1936, corresponding statistics relating to the production of nepheline syenite have been included with those pertaining to the commercial production of feldspar and quartz.

Production in 1946, as measured by the sales of feldspar, nepheline syenite and quartz, was valued at \$2,168,673 which was the highest recorded amount to date. Sales in the preceding year, 1945, amounted to \$2,093,880.

Feldspar production came entirely from Ontario and Quebec; nepheline syenite came from Ontario only, and quartz (silica) in various forms was produced in Nova Scotia, Quebec, Ontario, Saskatchewan and British Columbia.

In 1946 there were 34 active firms in the industry, but only 30 of these properties made shipments during the year. The industry employed 517 persons to whom \$876,034 was paid in salaries and wages. The cost of fuel, electricity, process supplies, containers and freight amounted to \$440,701 which, if deducted from the gross output value, yields a net value of \$1,727,972 compared with \$1,626,590 in 1945.

Table 247.—Principal Statistics of the Feldspar and Quartz Mining Industry(*), 1939-1946

Year	Number of shipping mines	Average number of employees	Total salaries and wages	Cost of purchased fuel and electricity at works	Cost of process supplies	Gross value of shipments f.o.b. works
			\$	\$	\$	\$
1939.....	38	338	330,170	79,114	99,607	1,352,671
1940.....	41	400	377,254	76,134	138,383	1,508,999
1941.....	35	506	610,489	91,165	159,818	1,838,054
1942.....	34	533	782,903	124,100	287,928	1,998,996
1943.....	34	535	768,199	134,247	322,605	2,138,229
1944.....	41	529	772,385	166,501	241,400	2,104,030
1945.....	27	483	767,517	180,799	220,873	2,093,880
1946.....	30	517	876,034	161,208	180,207	2,168,673

(*) Includes nepheline syenite.

Table 248.—Principal Statistics of the Feldspar and Quartz Mining Industry, 1945 and 1946

	Quebec		Other Provinces (b) (c)	
	1945	1946	1945	1946
Number of active firms (a).....	13	17	18	17
Number of shipping mines.....	12	15	15	15
Number of employees—Administration.....	36	23	39	22
Workmen.....	231	248	165	224
Total.....	267	271	204	246
Salaries and wages—Salaries..... \$	62,064	54,451	65,012	52,454
Wages..... \$	340,843	389,165	299,598	379,964
Total..... \$	402,907	443,616	364,610	432,418
Selling value of products (gross)..... \$	873,321	943,109	1,220,559	1,225,564
Cost of fuel and purchased electricity..... \$	91,166	91,672	89,633	69,633
Cost of process supplies, freight and containers..... \$	106,855	140,173	179,636	139,320
Net value of sales..... \$	675,300	711,264	951,290	1,016,708

(a) Small shippers whose production is recorded from consumers' returns are sometimes not included in the total.

(b) Includes data relating to nepheline syenite.

(c) Includes plants in Nova Scotia, Saskatchewan, and British Columbia.

Table 249.—Number of Workmen, by Months, 1946

Month	Quebec			Ontario				Canada Total (*)
	Surface	Mill		Surface		Under-ground	Mill	
	Male	Female	Male	Male	Female	Male	Male	
January.....	130	1	100	40	3	41	24	351
February.....	124	1	108	54	3	42	25	369
March.....	112	1	97	57	3	48	28	358
April.....	112	1	98	122	3	54	26	431
May.....	146	1	108	108	3	87	34	505
June.....	163	1	106	114	3	82	34	519
July.....	155	1	108	162	3	92	34	567
August.....	150	1	101	146	3	97	37	550
September.....	162	1	98	140	3	82	34	522
October.....	187	1	100	125	3	96	36	550
November.....	180	1	96	119	3	66	26	507
December.....	141	1	98	102	3	57	26	452
Average.....	146	1	101	107	3	71	30	472

(*) Includes a few employees in Nova Scotia in some months.

FELDSPAR

Production of feldspar, crude and ground, during 1946 was 35,243 tons worth \$384,677 compared with 30,246 tons valued at \$282,656 in 1945. Quebec produced the major portion, namely 29,758 tons worth \$330,981.

Exports of feldspar from Canada totalled 19,239 tons at \$140,403 in 1946 and imports of ground feldspar amounted to 705 tons valued at \$13,622.

The consumption of ground feldspar in Canada amounted to 13,114 tons in 1946, including 4,099 tons for scouring powders, 2,701 tons for glass, 4,800 tons for pottery, etc., and 1,499 tons for enamelling.

The greater part of the production of feldspar is used in the pottery, glass, enamelware and other ceramic trades, and the remainder mainly in scouring soaps and cleansers, and for bonding of fired abrasive wheels and other shapes. Some coarsely crushed spar, usually made from impure waste or quarry fines, is sold for stucco dash, artificial stone, chicken grit, etc. Small tonnages of specially selected crude (dental spar) are used in the manufacture of artificial teeth, and such material commands a large premium.

Most of the feldspar used is of the high-potash type, though some high-soda spar is used for blending purposes and in low-fired enamels and glazes. Practically all colours are equally acceptable for ceramic uses, but for cleanser purposes, pale shades of white to buff are demanded.

Table 250.—Production of Feldspar, Crude and Ground, in Canada, by Provinces 1930-1946

Year	Quebec		Ontario		Manitoba	
	Tons	\$	Tons	\$	Tons	\$
1930.....	17,074	163,802	9,722	104,667	.....	.....
1931.....	10,381	86,842	7,962	100,119	.....	.....
1932.....	3,390	39,063	3,657	42,920	.....	.....
1933.....	6,183	59,283	4,387	45,350	.....	.....
1934.....	9,207	78,853	7,302	61,665	1,793	6,763
1935.....	7,002	63,075	8,656	75,003	2,084	6,252
1936.....	8,115	75,703	8,409	70,840	1,322	7,932
1937.....	12,285	105,612	9,061	72,610	.....	.....
1938.....	5,874	62,878	8,106	65,964	78	451
1939.....	5,399	60,923	7,061	51,056	40	330
1940.....	8,548	89,004	12,907	98,619	.....	.....
1941.....	14,218	137,160	11,822	107,124	.....	.....
1942.....	16,802	164,588	5,468	49,353	.....	.....
1943.....	17,199	176,222	6,659	61,549	.....	.....
1944.....	17,842	177,271	5,667	50,361	.....	.....
1945.....	26,389	247,242	3,857	35,414	.....	.....
1946.....	29,758	330,981	5,485	53,696	.....	.....

Table 251.—Consumption of Ground Feldspar in Canada, 1941-1946

	1941	1942	1943	1944	1945	1946
	Tons	Tons	Tons	Tons	Tons	Tons
(a) By Uses						
Glass.....	909	2,880	2,614	2,382	2,740	2,701
Scouring powders.....	5,411	4,344	5,892	4,617	4,847	4,099
Abrasives.....	40	119	58	75	60	15
Clay products (pottery, tile, insulators, etc.).....	3,755	3,234	2,947	2,625	2,347	4,800
Enamelling.....	2,030	1,676	1,667	1,372	2,684	1,499
Miscellaneous.....				102	266	
Total.....	12,145	12,253	13,178	11,173	12,944	13,114
(b) By PROVINCES						
Quebec.....	4,763	5,626	7,555	6,388	6,815	6,886
Ontario.....	7,223	6,588	5,210	4,485	5,769	5,849
Manitoba.....			166			
Alberta.....	159	39	247	300	360	379
Canada.....	12,145	12,253	13,178	11,173	12,944	13,114

Table 252.—Imports Into Canada and Exports of Feldspar, 1945 and 1946

	1945		1946	
	Tons	\$	Tons	\$
IMPORTS—				
Crude feldspar.....				
Ground feldspar.....	826	15,052	705	13,622
EXPORTS—				
Feldspar.....	16,888	125,028	19,239	140,40

NEPHELINE SYENITE

Production of nepheline syenite in Canada during 1946 was confined to one company, The American Nepheline Corporation Ltd. at Lakefield, Ontario. Shipments were valued at \$229,198 compared with \$275,766 in 1945. All of the exports went to the United States, the quantity being 51,839 tons valued at \$168,895 compared with 48,351 tons at \$153,311 in the preceding year.

Consumption of ground nephelinesyenite in Canada amounted to 5,803 tons in 1946 including 5,584 tons for glass and 219 tons in the pottery industry.

Nepheline syenite is a quartz-free rock consisting essentially of nephelite and albite and of microcline feldspar. It usually contains small amounts of iron-bearing impurities, chiefly magnetite, hematite and biotite mica as well as such minor accessory minerals as sodalite, cancrinite, corundum, zircon, muscovite mica, calcite, etc. In the developed Canadian deposits, iron-bearing impurities are of coarse sizes and can be readily removed from the crude rock by magnetic means. Other objectionable minerals, notably corundum and muscovite, can be extracted by flotation methods, with the recovery of commercial grades of such products. Nepheline syenite is relatively high in alumina (24 per cent in average Canadian commercial rock) compared with straight feldspar (17 to 20 per cent), and for this reason it is used as a feldspar substitute in a number of ceramic industries, more especially in the glass trade.

Table 253.—Production(*) of Nepheline Syenite in Canada, 1936-1946

Year	Value	Year	Value
	\$		\$
1936.....	37,426	1942.....	246,893
1937.....	121,481	1943.....	292,010
1938.....	142,737	1944.....	217,989
1939.....	140,148	1945.....	275,766
1940.....	117,849	1946.....	229,198
1941.....	227,583		

(*) Only one or two producers in recent years; quantity not available for publication.

Table 254.—Consumption of Ground Nepheline Syenite in Canada, 1943-1946

	1943	1944	1945	1946
	Tons	Tons	Tons	Tons
(a) By Uses				
Glass.....	5,630	7,285	7,778	5,584
Pottery.....		257	324	219
Total.....	5,630	7,542	8,102	5,803
(b) By PROVINCES				
Quebec.....	1,268	1,498	1,570	1,192
Ontario.....	4,133	5,107	4,991	3,973
Alberta.....	229	937	1,541	638
Total.....	5,630	7,542	8,102	5,803

QUARTZ (SILICA)

Production of quartz or siliceous material during the year under review was 1,413,378 short tons valued at \$1,554,798, a decrease in quantity from the 1,513,628 tons produced in 1945, but an increase over the value of \$1,535,458 which was placed on that year's sales. Output included crude and crushed dyke quartz, quartzite, sandstone and natural silica sands and gravels. The mineral in one or more of the forms thus defined was produced during 1946 in Nova Scotia, Quebec, Ontario and Saskatchewan. Shipments of silica in Nova Scotia were made to steel plants largely for the making of silica brick. In Quebec, high-grade silica sands were produced for the manufacture of glass and chemicals while a considerable tonnage of these same sands was sold for sand-blasting, moulding and various other purposes; in the same province relatively large quantities of crushed quartzite were mined and milled for the manufacture of silicon carbide and other products. The greater part of the tonnage of silica shipped in Ontario during 1946 represented material intended for use in the production of silica brick, cement and ferro-silicon and for the fluxing of nickel-copper ores. Quartz production as recorded for Saskatchewan represented low-grade natural silica sands or gravels shipped as flux to the Flin Flon smelter of the Hudson Bay Mining and Smelting Co. Ltd.

Table 255.—Production(*) of Quartz (Silica) in Canada, 1932-1946

Year	Tons	\$	Year	Tons	\$
1932.....	189,132	276,147	1940.....	1,858,302	1,203,527
1933.....	185,783	297,820	1941.....	2,052,878	1,366,187
1934.....	272,563	482,265	1942.....	1,738,174	1,538,162
1935.....	233,002	424,882	1943.....	1,776,740	1,608,448
1936.....	1,046,649	597,781	1944.....	1,740,262	1,658,409
1937.....	1,377,448	1,129,011	1945.....	1,513,628	1,535,458
1938.....	1,380,011	961,617	1946.....	1,413,378	1,554,798
1939.....	1,582,935	1,100,214			

(*) Complete data for production of this material in Ontario previous to 1936 are not available.

Table 256.—Production of Quartz, by Provinces, 1945 and 1946

	1945		1946	
	Short tons	Value	Short tons	Value
	\$		\$	
PRODUCTION (shipments) (*)—				
Nova Scotia.....	10,734	36,171	7,525	15,550
Quebec.....	195,857	626,079	214,076	612,128
Ontario.....	1,165,238	820,664	1,052,644	852,713
Saskatchewan.....	141,799	52,544	130,105	47,542
British Columbia.....			9,028	26,865
Canada.....	1,513,628	1,535,458	1,413,378	1,554,798

(*) Includes both crude and crushed quartz, crushed sandstone and quartzite, and natural silica sands.

Table 257.—Production (a) of Natural Low-Grade Silica Sand and Silica Gravel as Non-Ferrous Smelter Flux, 1944-1946

	1944		1945		1946	
	Tons	\$	Tons	\$	Tons	\$
Ontario.....	(b) 608,403	212,840	523,558	183,245	461,122	161,392
Saskatchewan.....	143,101	50,085	141,799	52,544	130,105	47,542
Canada.....	751,504	262,925	665,357	235,789	591,227	208,934

(a) Included in totals shown in Tables 255 and 256.

(b) Exclusive of low-cost quartzite used in smelting nickel-copper ores.

Table 258.—Imports Into Canada and Exports of Silica, 1945 and 1946

	1945		1946	
	Quantity	\$	Quantity	\$
IMPORTS—	Tons		Tons	
Ground flint stone.....	712	20,550	823	34,449
Canister.....	426	3,384	518	3,367
Silica sand for manufacturing.....	410,427	926,648	390,014	914,456
Silicex or crystallized quartz.....	7,251	247,393	10,690	114,450
Silica fire brick.....		741,394		579,075
EXPORTS—				
Quartzite.....	121,435	282,578	200,316	441,976

Table 259.—Consumption of Silica Sand and Ground Quartz in Canada, by Industries and by Provinces, 1942-1946

	1942	1943	1944	1945	1946
(a) BY INDUSTRIES					
	(Tons of 2,000 pounds)				
Steel foundries.....	134,724	129,881	89,807	81,590	58,503
Iron foundries.....	9,146	15,104	7,498	11,135	8,953
Ferro-alloys.....	4,338	4,535	6,481	9,949	6,013
Enamelling.....	632	1,071	394	423	633
Brass foundries.....	1,874	3,237	2,514		
White metal foundries.....	42	12	41		
Smelters.....	321	3,774	191		
Electrical apparatus.....	329	681			350
Glass.....	145,005	132,992	131,987	135,959	123,910
Artificial abrasives and abrasive products.....	76,943	89,022	73,771	74,406	83,910
Products from imported clays.....	3,036	2,773	3,441	3,669	4,554
Monumental and ornamental stone.....	1,385	980	759	820	1,464
Prepared foundry supplies.....	1,082	126	169	108	142
Cement mills.....	20,711	19,473	23,942	29,424	31,222
Refractories.....	1,642	1,365	1,023	1,114	983
Roofing paper.....	2,879	2,135	4,307	885	1,193
Chemicals.....	15,296	17,305	19,708	17,073	19,456
Fertilizers.....	15,848	37,988	20,715	25,871	44,077
Paints.....	1,310	1,239	1,767	1,904	1,959
Soaps and washing compounds.....	180	246	4,545		
Cleaning preparations.....	2,282	3,004	58	4,350	5,256
Matches.....	333	334	349	385	356
Miscellaneous.....	402	236	74	2,678	4,464
Total.....	439,740	467,513	393,541	401,733	397,398
(b) BY PROVINCES					
Prince Edward Island.....	309	335			
Nova Scotia.....	4,836	2,364	1,087	2,001	2,659
New Brunswick.....	3,996	6,810	705	8,126	20,356
Quebec.....	207,244	210,909	204,970	192,482	193,504
Ontario.....	190,465	210,875	153,871	159,543	139,898
Manitoba.....	12,635	11,989	11,168	16,939	19,717
Saskatchewan.....	35	59	72	41	368
Alberta.....	14,777	16,295	16,947	17,235	16,572
British Columbia.....	5,443	7,967	4,721	5,366	4,324
Canada.....	439,740	467,513	393,541	401,733	397,398

THE GYPSUM INDUSTRY

(1) Primary Production—The Gypsum Mining and Quarrying Industry

Shipments of gypsum reached a new high in 1946 when 1,810,937 tons valued at \$3,671,503 were moved from the quarries toward the markets. In the previous year 839,781 tons, worth \$1,783,290 were shipped. The tonnage in each year was made up of various grades of crude gypsum and crude anhydrite as shipped from the quarries or mines, together with the calcined gypsum used in, or shipped from, the quarries or "primary" plants.

The quantity of crude mineral mined during 1946 included 1,969,173 tons of gypsum and 57,872 tons of crude anhydrite. A total of 321,887 tons of crude gypsum was calcined at the primary plants.

In 1946 the gypsum mining industry operated 14 quarries or mines and paid to 753 employees a total of \$1,246,673 in wages and salaries. The cost of fuel, electricity, process supplies and containers amounted to \$806,571 and the net value of production was \$2,890,156.

Exports in 1946 included 1,488,710 tons of crude gypsum valued at \$1,598,661 and 919 tons of plaster of Paris or wall plaster worth \$23,501. Imports included 3,731 tons of gypsum worth \$22,674 and 7,633 tons of plaster of Paris and wall plaster valued at \$165,863.

Some of the Canadian gypsum mining companies restrict their operations in the Dominion to the production and sale of crude gypsum or anhydrite while others, in addition to marketing various grades of crude gypsum, produce a calcine for sale or for consumption in their own manufacturing plants in making wallboard, wall plaster, etc.

Table 260.—Principal Statistics for the Gypsum Mining Industry, 1939-1946

Year	Number of firms	Number of plants	Average number of employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies	Gross selling value of products, including containers
				\$	\$	\$	\$
1939.....	10	17	714	692,158	193,488	105,831	1,935,127
1940.....	9	16	694	717,666	194,964	223,375	2,065,933
1941.....	8	15	648	745,008	222,564	229,444	2,248,428
1942.....	7	13	510	657,620	178,682	65,457	1,254,182
1943.....	6	12	438	617,780	201,980	46,063	1,381,468
1944.....	8	12	328	490,872	148,743	239,198	1,511,978
1945.....	7	12	434	647,287	184,619	391,026	1,783,290
1946.....	8	14	753	1,246,673	260,479	520,868	3,696,727

Table 261.—Production (a) of Gypsum in Canada, 1945 and 1946

	1945		1946	
	Quantity	Value	Quantity	Value
	Tons	\$	Tons	\$
SHIPMENTS BY GRADES—				
Crude—Lump or mine run.....	27,063	64,631	27,762	98,847
Crushed (c).....	638,217	760,042	1,541,747	1,772,064
Fine ground.....	424	2,843	666	5,910
Calcined gypsum, sold and used (b).....	174,077	955,774	240,762	1,794,682
Total.....	839,781	1,783,290	1,810,937	3,671,503
SHIPMENTS BY PROVINCES—				
Nova Scotia.....	634,960	790,273	1,538,738	1,812,815
New Brunswick.....	46,755	236,833	38,839	550,972
Ontario.....	92,174	385,516	122,524	492,179
Manitoba.....	42,275	300,636	63,187	428,133
British Columbia.....	23,617	70,032	47,649	387,404
Total.....	839,781	1,783,290	1,810,937	3,671,503
Total gypsum mined and quarried (c).....	830,723		2,027,045	
Total gypsum calcined (b).....	210,276		321,887	

(a) "Production" means Producers' Shipments of crude gypsum plus calcined gypsum shipped or used at mine.
 (b) Does not include gypsum calcined in manufacturing plants located in Montreal and Calgary, but includes calcine used in manufacturing plants operated in direct or close conjunction with the mines—the value of calcine used is its value as a process material.
 (c) Includes some anhydrite quarried in Nova Scotia.

Table 262.—Production of Crude and Calcined Gypsum in Canada, 1920-1946

Year	Tons	Value	Year	Tons	Value
		\$			\$
1920.....	429,144	1,893,991	1934.....	461,237	863,776
1921.....	386,550	1,785,538	1935.....	541,864	932,203
1922.....	559,265	2,160,898	1936.....	833,822	1,278,971
1923.....	578,301	2,243,100	1937.....	1,047,187	1,540,483
1924.....	646,016	2,208,108	1938.....	1,008,799	1,502,265
1925.....	740,323	2,389,891	1939.....	1,421,934	1,935,127
1926.....	833,728	2,770,813	1940.....	1,448,788	2,065,933
1927.....	1,063,117	3,251,015	1941.....	1,593,406	2,248,428
1928.....	1,246,368	3,743,648	1942.....	566,166	1,254,182
1929.....	1,211,689	3,345,696	1943.....	446,848	1,381,468
1930.....	1,070,968	2,818,788	1944.....	596,164	1,511,978
1931.....	863,752	2,111,517	1945.....	839,781	1,783,290
1932.....	438,629	1,083,379	1946.....	1,810,937	3,671,503
1933.....	382,736	675,822			

Table 263.—Production of Crude and Calcined Gypsum in Canada, by Months, 1945 and 1946

Month	1945	1946	Month	1945	1946
	Tons	Tons		Tons	Tons
January.....	12,936	18,898	July.....	82,479	201,414
February.....	12,901	21,942	August.....	99,012	243,279
March.....	16,508	54,446	September.....	132,380	248,143
April.....	24,776	110,311	October.....	150,756	270,937
May.....	43,759	142,589	November.....	110,025	242,123
June.....	103,749	150,195	December.....	50,500	106,660
			Total.....	839,781	1,810,937

Table 264.—Imports and Exports of Gypsum, 1945 and 1946

	1945		1946	
	Quantity	Value	Quantity	Value
	Tons	\$	Tons	\$
IMPORTS—				
Gypsum, crude (sulphate of lime).....	888	22,183	3,731	22,674
Gypsum, ground, not calcined.....				
Plaster of Paris and wall plaster.....				
Total.....	2,884	89,144	7,633	165,863
		111,327		188,537
EXPORTS—				
Gypsum or plaster, crude.....	558,632	581,625	1,488,710	1,598,661
Plaster of Paris, wall plaster.....				
Gypsum, ground.....	447	9,058	919	23,501
Total.....		590,683		1,622,162

Table 265.—Consumption of Gypsum in the Portland Cement Industry in Canada 1939-1946

Year	Tons	Year	Tons
1939.....	31,492	1943.....	47,034
1940.....	38,903	1944.....	42,672
1941.....	49,031	1945.....	45,883
1942.....	49,816	1946.....	65,431

Table 266.—Consumption of Gypsum in the Gypsum Products Industry, 1939-1946

Year	Crude	Calcined
	Tons	Tons
1939.....	19,946	105,397
1940.....	21,611	125,917
1941.....	30,978	157,488
1942.....	20,742	149,885
1943.....	17,489	162,273
1944.....	26,683	165,750
1945.....	10,147	194,351
1946.....	46,617	253,617

Table 267.—Employees, Salaries and Wages, by Provinces, 1945 and 1946

Province	Average Number of Employees					Salaries	Wages	Total Salaries and Wages
	On Salaries		On Wages		Total			
	Male	Female	Male	Female				
1945						\$	\$	\$
Nova Scotia.....	18	6	155	1	180	35,345	225,686	261,031
Other provinces.....	13	.....	240	1	254	32,543	353,713	386,256
Canada.....	31	6	395	2	434	67,888	579,399	647,287
1946								
Nova Scotia.....	24	4	376	3	407	64,816	590,633	655,449
Other provinces.....	17	5	322	2	346	45,929	545,295	591,224
Canada.....	41	9	698	5	753	110,745	1,135,928	1,246,673

Table 268.—Number of Wage-Earners on Payroll or Time Record on the Last Day of Each Month, 1945-1946

Month	1945					1946				
	Mine			Mill		Mine			Mill	
	Surface		Under-ground	Male	Female	Surface		Under-ground	Male	Female
	Male	Female				Male	Female			
January.....	61	1	78	139	.....	81	2	133	198	2
February.....	55	1	76	121	.....	75	2	133	197	2
March.....	67	2	81	137	.....	90	2	135	216	2
April.....	107	2	79	144	.....	233	2	134	270	2
May.....	124	2	91	160	.....	315	2	137	323	2
June.....	184	2	87	161	.....	316	2	138	336	2
July.....	185	2	87	175	.....	350	3	135	348	2
August.....	178	2	89	189	.....	352	3	136	360	2
September.....	202	2	91	193	.....	365	3	144	357	3
October.....	177	2	97	198	.....	396	3	145	294	3
November.....	199	2	98	215	.....	381	3	150	264	2
December.....	146	2	89	152	.....	302	3			
Average.....	142	2	88	165	.....	269	3	108	291	2

(2) Secondary Production—The Gypsum Products Industry

Ten Canadian factories, operated by 4 companies, manufactured gypsum products having a factory selling value of \$8,755,090 during 1946. This output was 53.2 per cent over the 1945 total of \$5,716,114. The main products were gypsum wallboard, gypsum hardwall plaster, gypsum lath, gypsum tile and gypsum blocks.

The average number of employees in these works in 1946 was 905, who were paid \$1,298,693 in salaries and wages. Expenditures for fuel and electricity amounted to \$412,031 and materials used in manufacturing processes cost \$4,076,812.

Table 269.—Principal Statistics of the Gypsum Products Industry, 1945 and 1946

	1945	1946
Number of establishments.....		
Number of employees.....	9	10
Salaries and wages.....	603	905
Cost of fuel and electricity.....	\$ 937,369	1,298,693
Cost of materials at works.....	\$ 289,914	412,031
Selling value of products at works.....	\$ 2,843,004	4,076,812
	\$ 5,716,114	8,755,090

NOTE.—Profits or losses cannot be calculated from above figures as data are not available for general expense items, such as interest, rent, depreciation, taxes, insurance, advertising, etc.

Table 270.—Employees, Salaries and Wages, 1945 and 1946

	1945	1946
Employees—On salaries—Male.....No.	58	78
Female.....No.	17	15
On wages — Male.....No.	474	772
Female.....No.	54	40
Total Employees.....No.	603	905
Salaries.....\$	157,769	243,967
Wages.....\$	779,600	1,054,726
Total Salaries and Wages.....\$	937,369	1,298,693

Table 271.—Wage-Earners, by Months, 1945 and 1946

	1945			1946		
	Male	Female	Total	Male	Female	Total
January.....	442	43	485	711	41	752
February.....	443	41	484	700	40	740
March.....	439	44	483	727	40	767
April.....	429	52	481	734	39	773
May.....	450	52	502	766	40	806
June.....	454	51	505	792	40	832
July.....	452	58	510	805	40	845
August.....	454	62	516	812	39	851
September.....	486	66	552	803	39	842
October.....	536	63	599	804	40	844
November.....	566	60	626	803	40	843
December.....	532	62	594	809	39	848
Average.....	474	54	528	772	40	812

Table 272.—Materials Used in the Gypsum Products Industry, 1945 and 1946

Material	1945		1946	
	Quantity	Cost at works	Quantity	Cost at works
	Tons	\$	Tons	\$
Gypsum, crude.....	10,147	80,298	46,617	202,021
Gypsum, calcined (plaster of Paris).....	194,351	1,143,123	253,617	1,403,169
Paper.....	15,488	1,038,137	23,309	1,713,069
Starch or paste.....	810	65,485	1,146	114,449
Hair.....	83	21,188	108	26,607
Retarder.....	256	22,469	367	33,563
Sawdust and shavings.....	283	3,084		5,630
Containers, etc.....		131,894		176,465
All other materials.....		337,326		401,839
Total.....		2,843,004		4,076,812

Table 273.—Output of the Gypsum Products Industry, 1945 and 1946

Product	Unit of measure	1945		1946	
		Quantity	Selling value at works	Quantity	Selling value at works
			\$		\$
Gypsum wallboard.....	sq. ft.	133,977,115	3,405,323	203,361,505	5,502,593
Gypsum hard wall plasters.....	ton	67,076	875,529	88,138	1,230,062
All other products (*).....			1,435,262		2,022,435
Total			5,716,114		8,755,090

(*) Includes gypsum tile and blocks, gypsum lath, etc.

THE IRON OXIDES (OCHRE) INDUSTRY

Sales by Canadian producers of ochreous iron oxides during 1946 totalled 12,695 tons valued at \$152,268 compared with 10,314 tons worth \$172,053 in 1945. These figures include the mineral in both the crude and refined states. Production from Quebec amounted to 12,268 tons worth \$146,401 and the remainder came from a deposit in British Columbia.

There were 60 persons employed by the 5 firms which operated in 1946, and the payrolls for the year amounted to \$77,727. Fuel and electricity cost \$16,656 and the cost of process supplies was \$4,200. Operations in the industry are seasonal, starting the latter part of April and closing in December.

The following information relating to ochreous oxides in Canada is taken from a report prepared by the Bureau of Mines, Ottawa:

"Ochreous iron oxide, which is sold uncalcined and is used chiefly in the purification of illuminating gas, comprises the bulk of the minerals produced under this category. The calcined form of ochreous iron oxide is used in the manufacture of paints. A smaller quantity of natural iron oxides associated with clay-like materials in the form of umbers and siennas, is produced in the raw and in the calcined state for use as pigments in paints. The Canadian iron oxide industry is small and the quantity produced shows little change from year to year. Present producing localities have met the requirements of the domestic pigment trade for the cheaper grades for many years.

"The production for some time past has come mostly from deposits near Trois-Rivières, Quebec, but there are other deposits in different parts of Canada that could be operated were the demand sufficient to warrant doing so.

"In the past, deposits in Quebec were operated near Ste. Anne de Beaupré, Montmorency county; in Lynch township, Labelle county; and at St. Raymond, Portneuf county.

"In British Columbia, there has been a small production since 1923 of iron oxide from Alta Lake, New Westminster district, and from oxide beds in the Windermere district. The oxide is used chiefly for gas purification.

"The Canadian price of red iron oxide, f.o.b. Toronto or Montreal, as given by Canadian Chemistry and Process Industries, remained at 2 to 7 cents a pound throughout 1946, while yellow, brown and black iron oxides remained between 5 and 12 cents a pound."

Table 274.—Principal Statistics of the Natural Iron Oxides Industry in Canada, 1944-1946

	1944	1945	1946
Number of firms	(*) 6	(*) 5	(*) 5
Number of employees—Administration.....	8	8	9
Workmen.....	47	43	51
Total.....	55	51	60
Salaries and wages—Salaries..... \$	11,416	13,382	15,748
Wages..... \$	38,460	44,629	61,979
Total..... \$	49,876	58,011	77,727
Selling value of products (gross)..... \$	150,250	172,053	152,268
Cost of fuel and purchased electricity..... \$	19,115	15,851	16,656
Cost of process supplies..... \$	6,700	5,900	4,200
Freight..... \$	11,670	13,650	15,161
Selling value of products (net)..... \$	112,765	136,652	116,251

(*) One producer in British Columbia, remainder in Quebec.

Table 275.—Production of Iron Oxides, by Provinces, 1945 and 1946

	1945		1946	
	Quantity	Value	Quantity	Value
		\$		\$
Quebec(*).....	9,917	170,068	12,268	146,401
British Columbia.....	397	1,985	427	5,867
Total.....	10,314	172,053	12,695	152,268

(*) Includes crude and refined grades.

Table 276.—Production of Natural Iron Oxides in Canada, 1927-1946

Year	Quantity	Value	Year	Quantity	Value
	Short tons	\$		Short tons	\$
1927.....	6,125	103,536	1937.....	6,197	83,640
1928.....	5,414	111,198	1938.....	5,821	71,769
1929.....	6,518	115,932	1939.....	6,015	88,418
1930.....	6,596	83,873	1940.....	9,979	111,874
1931.....	5,520	49,205	1941.....	10,045	142,069
1932.....	5,240	46,161	1942.....	9,304	151,653
1933.....	4,357	53,450	1943.....	8,401	135,593
1934.....	4,959	66,166	1944.....	8,599	150,250
1935.....	5,516	77,075	1945.....	10,314	172,053
1936.....	5,854	69,630	1946.....	12,695	152,268

Production of iron oxides in Canada since 1886 to the end of 1946 amounted to 356,722 tons valued at \$3,884,024.

Table 277.—Imports Into Canada and Exports of Iron Oxides, 1945 and 1946

	1945		1946	
	Quantity	Value	Quantity	Value
	Tons	\$	Tons	\$
IMPORTS—				
Ochres, ochrey earths, siennas and umbers.....	1,900	97,164	1,437	81,929
Oxides, fireproofs, rough stuff, fillers and colours, dry, n.o.p.....	3,221	1,238,768	3,647	1,709,726
EXPORTS—				
Pigments, n.o.p. (exclusive of white lead).....	6,078	1,012,524	6,754	1,394,354
Iron oxides.....	2,447	96,490	4,366	199,619

Table 278.—Consumption of Iron Oxides in Specified Canadian Industries, 1938-1946

Year	Coke and Gas		Paint and Varnishes			
			Iron oxide pigments		Ochres, siennas and umbers	
	Quantity	Value	Quantity	Value	Quantity	Value
	Tons (a)	\$	Tons	\$	Tons	\$
1938.....	(b)	41,013	822	70,736	487	41,062
1939.....	(b)	35,417	882	80,274	523	46,134
1940.....	5,417	42,491	1,146	112,826	575	62,636
1941.....	5,133	36,480	1,602	187,836	464	58,385
1942.....	4,600	33,790	2,334	253,383	412	52,155
1943.....	6,568	45,946	2,321	222,858	440	68,425
1944.....	9,194	71,545	2,614	242,234	648	69,092
1945.....	7,357	75,441	2,799	310,434	671	71,231
1946.....	9,385	69,899	2,564	288,190	543	75,769

(a) Oxide and purifying materials.

(b) Data not available.

Table 279.—Number of Workmen(*), by Months, 1945 and 1946

Month	1945		1946		Month	1945		1946	
	Mine	Mill	Mine	Mill		Mine	Mill	Mine	Mill
	(Number)					(Number)			
January.....		28	3	30	July.....	26	24	38	40
February.....		27		27	August.....	26	29	33	42
March.....		27		30	September.....	27	31	16	38
April.....	9	31	14	38	October.....	20	32	17	35
May.....	25	25	13	39	November.....	6	34	16	28
June.....	23	27	30	39	December.....	1	38	12	28

(*) No underground work.

THE MICA MINING INDUSTRY

Canadian production or primary shipments of all grades of mica in 1946 totalled 8,720,669 pounds valued at \$199,039 compared with 7,044,221 pounds worth \$233,270 in 1945. Of the total output in 1946, mines in the province of Quebec contributed 2,397,788 pounds valued at \$108,667 and Ontario 4,707,381 pounds worth \$66,952; the British Columbia mines shipped 1,615,500 pounds valued at \$23,420. The major portion of the shipments was phlogopite (amber mica) which weighed 7,104,739 pounds and was valued at \$175,579. Nearly all the muscovite (white mica) was produced in British Columbia.

Table 280.—Principal Statistics of the Mica Mining Industry in Canada, 1945 and 1946

	1945	1946			
	Canada (*)	Quebec	Ontario	British Columbia	Canada (*)
Number of firms or operators.....	40	20	6	1	27
Number of employees—On salary.....	16	13	3		16
On wages.....	158	94	19		113
Total.....	174	107	22		129
Salaries and wages—Salaries..... \$	31,973	26,644	4,340		30,984
Wages..... \$	158,165	103,425	19,207		122,632
Total..... \$	190,138	130,069	23,547		153,616
Selling value of products (gross)..... \$	233,270	108,667	66,952	23,420	199,039
Cost of fuel and electricity..... \$	21,597	18,684	1,624		20,308
Cost of process supplies used..... \$	28,895	17,628	150		17,778
Selling value of products (net)..... \$	182,778	72,355	65,178		160,953

(*) Does not include general statistics for one plant operating in British Columbia.

Table 281.—Mica Production (Primary Sales) in Canada, by Classes, 1945 and 1946

Grade	1945		1946	
	Pounds	Total value f.o.b. shipping point	Pounds	Total value f.o.b. shipping point
		\$		\$
Rough, mine-run or rifted.....	11,910	886	692,339	35,381
Mica sold for mechanical splitting.....	329,476	57,816	254,363	42,523
Splittings.....	4,050	3,865	13,050	10,725
Ground or powdered.....	1,753,030	36,799	2,657,230	51,146
Scrap—Mine or shop waste and mica mined and sold for grinding.....	4,877,886	30,074	5,073,092	38,216
Flake (mica schist)—Natural or recovered by milling.....				
Trimmed mica.....	67,869	103,830	30,595	21,048
Total Mica Shipments.....	7,044,221	233,270	8,720,669	199,039
Varieties—Phlogopite mica (amber).....	5,694,504	142,535	7,104,739	175,579
Muscovite mica (white).....	1,349,717	90,735	1,615,930	23,460

Table 282.—Production (Sales) of Mica in Canada, by Provinces and Varieties, 1946

Province	Phlogopite		Muscovite		Total	
	Pounds	\$	Pounds	\$	Pounds	\$
Quebec.....	2,397,788	108,667			2,397,788	108,667
Ontario.....	4,706,951	66,912	430	40	4,707,381	66,952
British Columbia.....			1,615,500	23,420	1,615,500	23,420
Total Canada.....	7,104,739	175,579	1,615,930	23,460	8,720,669	199,039

Table 283.—Production (Sales) of Mica in Canada, 1937-1946

Year	Short tons	\$	Year	Short tons	\$
1937.....	945	133,731	1942.....	3,010	383,567
1938.....	519	80,989	1943.....	4,025	553,856
1939.....	1,068	147,321	1944.....	3,342	841,026
1940.....	975	237,145	1945.....	3,522	233,270
1941.....	1,743	335,288	1946.....	4,360	199,039

The total value of mica produced in Canada from the first official recording of mica statistics in 1886 to the end of 1946 amounted to \$10,624,861.

Table 284.—Imports and Exports of Mica, 1945 and 1946

	1945		1946	
	Pounds	Value	Pounds	Value
IMPORTS—		\$		\$
Mica and manufactures of, n.o.p.....		236,597		280,142
Vermiculite, crude.....		35,496		56,826
EXPORTS—				
Mica.....	4,853,600	33,200	3,899,400	33,601
Mica splittings.....	5,200	4,088	8,400	6,913
Mica manufactures.....		2,614		2,193
Mica, rough, untrimmed.....	801,400	107,740	675,900	99,059
Mica, trimmed.....	67,600	146,026	25,800	47,494
Mica, ground.....	352,000	11,055	451,000	17,808
Total Mica Exports.....		304,723		207,068

Table 285.—Consumption of Mica in Canada, by Industries, as Reported to the Annual Census of Industry, 1945 and 1946

	1945		1946	
	Quantity	Cost at works	Quantity	Cost at works
	Tons	\$	Tons	\$
In electrical apparatus industry.....	163	389,491	178	355,160
In rubber industry.....	166	20,405	132	16,868
In roofing(*).....	1,042	53,498	1,203	66,852
In mica manufacturing industry.....	52	71,377	70	109,475
Total Accounted For.....		534,771		548,355

(*) Includes mica used in manufacture of wall paper.

Table 286.—Number of Wage-Earners on Payroll or Time Record on the Last Day of Each Month or Nearest Work Day, 1945 and 1946

Month	1945				1946			
	Mine		Shop(*)		Mine		Shop(*)	
	Surface	Under-ground	Male	Female	Surface	Under-ground	Male	Female
January.....	64	46	44	84	34	27	47	8
February.....	47	37	40	33	30	26	45	8
March.....	44	35	41	30	28	26	44	8
April.....	45	31	47	30	33	22	39	7
May.....	38	23	55	21	42	16	38	6
June.....	52	24	64	12	38	17	43	6
July.....	59	19	60	20	43	16	55	5
August.....	52	19	55	14	46	15	62	5
September.....	63	8	42	14	37	15	62	5
October.....	65	13	40	14	37	16	60	5
November.....	48	22	48	14	23	6	58	6
December.....	54	20	48	14	25	10	52	6
Average.....	55	25	51	27	37	16	52	7

(*) Includes outside workers.

The following information has been extracted from a report on the Mica Industry by the Bureau of Mines, Ottawa:

Main source of phlogopite production is the general Ottawa region, both in Ontario and Quebec. Production of muscovite has been small and intermittent, and only rarely, as in the 1942-44 period, has mining for this type of mica been undertaken on an important scale. Most of the output is handled and prepared for market by producers and dealers having trimming establishments in or near Ottawa. A few operators make direct mine shipments of semi-rough mica to the United States for the production there of punched shapes. The making of thin splittings, now done on a very much smaller scale than formerly, is mostly farmed out in small rural communities in the Ottawa district. Scrap mica continues to be recovered on a considerable scale from old mine dumps, and these furnish most of the scrap sold for grinding, as well as considerable amounts of screened untrimmed mica shipped to the United States for the making of mechanical splittings.

In Quebec, in 1946, the Nellis mine, near Cantley, in Hull township, operated by Blackburn Bros., Ottawa, continued to be the leading producer. This company prepares its output in a shop at Ottawa, and also operates a grinding plant at its mine. The plant continued to be the leading Canadian producer of ground phlogopite mica. The remainder of the Quebec output came mainly from a number of small, scattered operations in the general Gatineau-Lievre River section, most of the material being rough mica sold to dealers, or scrap salvaged from old mine dumps.

Suzorite Company, Limited, a subsidiary of Siscoe Metals Ltd., proceeded with plans to develop production of flake and powdered phlogopite from a large body of "suzorite" rock in Suzor township, Laviolette county, Quebec. Several thousand tons of crude rock were mined and shipped to a plant installed by the company at Shawinigan Falls, Quebec, and some of the material was processed, mainly for the recovery of roofing grades of mica and of rock granules. Early in 1947, milling problems in connection with the processing crude suzorite for the recovery of maximum amounts of coarse flake were under study in the Bureau of Mines laboratories at Ottawa.

In Ontario, Sydenham Mining Company, Limited, operating the old Lacey mine, near Sydenham, in Loughborough township, Frontenac county, was the only important producer. This company ships its product in rough-trimmed form to its affiliate, Lacey Mica Company, of New Brighton, Staten Island, N.Y. Loughborough Mining Company (General Electric Company) continued recovery of scrap mica from old waste dumps at the Lacey mine, and was the leading shipper in 1946 of this class of product. The remaining small sales of sheet mica in the Province came chiefly from properties in the Perth area, Lanark county.

In British Columbia, ground muscovite mica, made from schist rock is produced by Fairey and Company, 661 Taylor Street, Vancouver, and by Geo W. Richmond and Company, 4190 Blenheim Street, Vancouver, for sale to the local roofing trade. The crude rock is procured from Albreda region.

THE PEAT INDUSTRY

Statistics for the peat industry in Canada cover the operations of firms which produce peat for use as fuel and those which produce peat moss and humus for commercial purposes. Peat fuel production in 1946 totalled 145 tons valued at \$1,305, the entire output originating in Ontario. Commercial production (shipments) of peat moss during 1946 amounted to 96,839 tons valued at \$2,395,649 (excluding cost of containers) compared with an output of 83,963 tons valued at \$2,011,139 in 1945.

In 1946 peat was produced by 41 firms, 18 being in Quebec, 14 in British Columbia, 5 in Ontario, and 2 firms in each of New Brunswick and Manitoba.

Employees numbered 1,391, to whom \$1,562,689 were paid in salaries and wages. Fuel and electricity cost \$671,161 and the cost of containers and packing materials amounted to \$523,858.

Exports from Canada of peat moss and other mosses amounted to 81,940 tons worth \$2,892,563 in 1946.

Peat is the material produced by the incomplete decomposition of vegetable matter either in water or in the presence of water under such conditions that atmospheric oxygen is excluded. The character of the peat depends upon conditions under which it was formed and upon the nature of the vegetation that contributed to its formation. Many species of plants are found in peat bogs, the most abundant being: mosses, such as sphagnum and hypnum; marsh and heath plants; grasses, rushes, etc.; marine plants; and sometimes trunks, roots, and leaves of trees. Peat occurs in nature in two distinct forms, unhumified and humified, which differ markedly in physical properties and in chemical composition. Unhumified peat is the dead moss of the sphagnum plant, only slightly humified. It is fibrous, elastic, of light greyish green, or yellowish to light brown colour, becoming somewhat darker on drying. It has an absorptive value of up to twenty-five times its own weight. It is used as a bedding litter for animals, for horticultural purposes, and as a filler for fertilizers. Because of its elasticity and low heat conductivity, it is used for insulating and sound-proofing and as a packing material.

Humified or fuel peat in its natural state is dark brown to black, colloidal, plastic, homogeneous, and somewhat elastic. It dries into a hard solid mass of a specific gravity higher than water. It has almost no absorptive value. Peat moss left in its natural state will humify in course of time and all fibrous matter eventually disappears.

Table 287.—Principal Statistics of the Peat Industry in Canada, 1945 and 1946

	1945	1946
Number of firms.....	37	41
Number of plants or bogs.....	37	41
Number of employees—On salary.....	85	64
On wages.....	1,148	1,327
Total	1,233	1,391
Salaries and wages—Salaries..... \$	135,857	156,603
Wages..... \$	1,168,392	1,405,996
Total \$	1,304,249	1,562,689
Selling value of products (gross).....	2,390,306	2,920,812
Cost of fuel and electricity.....	90,863	102,004
Process supplies used.....	47,136	45,299
Cost of containers and packing materials.....	378,105	523,853
Selling value of products (net).....	1,874,202	2,249,651

Table 288.—Principal Statistics, by Provinces, 1945 and 1946

Province	Number of firms	Number of employees	Salaries and wages	Cost of fuel, electricity, process supplies and containers	Production		
					Tons of peat sold or used		Gross selling value f.o.b. works
					As fuel	Moss	
1945			\$	\$			\$ (*)
Quebec.....	15	313	265,246	122,039	.....	18,517	487,545
Ontario.....	6	161	142,176	60,706	118	11,667	273,534
Manitoba and New Brunswick.....	4	94	93,557	46,466	.....	3,182	132,203
British Columbia.....	12	665	803,270	286,893	.....	50,597	1,492,024
Canada	37	1,233	1,304,249	516,104	118	83,963	2,390,306
1946							
Quebec.....	18	374	329,843	185,429	.....	26,382	658,658
Ontario.....	5	166	192,398	66,351	145	17,175	290,885
Manitoba and New Brunswick.....	4	152	142,298	42,475	.....	4,018	146,663
British Columbia.....	14	699	898,150	376,906	.....	49,264	1,824,606
Canada	41	1,391	1,562,689	671,161	145	96,839	2,920,812

(*) Includes cost of containers.

Table 289.—Production (Shipments) of Peat Fuel and Peat Moss in Canada, by Uses and Provinces, 1945 and 1946

Province	Fuel		Moss									
	Tons	\$	Horticulture		Insulation		Poultry and stable litter		Other uses		Total Moss	
			Tons	\$	Tons	\$	Tons	\$	Tons	\$	Tons	\$ (*)
1945												
Quebec.....			6,367	128,189	163	4,239	11,906	249,650	81	5,421	18,517	387,499
Ontario.....	118	1,062	8,505	148,930			3,162	75,170			11,667	224,100
Manitoba and New Brunswick.....			1,032	35,292	834	30,051	1,283	41,000	32	900	3,182	107,243
British Columbia.....			17,088	423,227	5	1,300	33,390	859,102	112	8,668	50,597	1,282,297
Total	118	1,062	32,993	735,638	1,002	33,590	49,742	1,224,922	225	14,989	83,963	2,011,139
1946												
Quebec.....			12,320	220,719	90	2,082	13,789	266,042	183	12,230	26,382	501,073
Ontario.....	145	1,305	10,261	151,390			6,914	77,106			17,175	228,496
Manitoba and New Brunswick.....			1,388	43,359			2,879	75,797	51	775	4,018	119,931
British Columbia.....			19,117	609,102	17	800	30,108	933,832	22	2,415	49,264	1,546,149
Total	145	1,305	43,086	1,024,570	107	2,882	53,890	1,352,777	256	15,420	96,839	2,395,649

(*) Does not include cost of containers which were valued at \$378,105 in 1945 and \$523,858 in 1946.

Table 290.—Peat Fuel Produced in Canada, 1941-1946

Year	Short tons	\$
1941.....	355	2,155
1942.....	172	1,204
1943.....	782	7,000
1944.....	644	5,397
1945.....	118	1,062
1946.....	145	1,305

Table 291.—Production of Peat Moss in Canada, 1941-1946

Year	Short tons	\$
1941.....	14,345	390,509
1942.....	28,520	658,771
1943.....	64,360	1,461,422
1944.....	80,446	1,869,553
1945.....	83,963	2,011,139
1946.....	96,839	2,395,649

NOTE.—The weight of peat moss shipped varies greatly depending on the moisture content. Weight is used as a unit of measure of production (shipments) owing to the fact that Canadian moss is shipped in various forms, including bales, bags, pads, etc., and at present there is no general standardization in Canada as to size of these products.

Table 292.—Workmen, by Months, 1945 and 1946

Month	1945 Total	1946				
		Bog		Dressing Plant		Total
		Male	Female	Male	Female	
January.....	531	208	2	297	22	529
February.....	506	209	2	317	15	543
March.....	529	265	5	324	6	600
April.....	619	464	43	351	13	871
May.....	1,033	1,228	79	302	83	1,692
June.....	2,299	1,636	245	301	20	2,202
July.....	2,518	1,851	225	280	15	2,371
August.....	2,043	1,986	307	263	13	2,569
September.....	978	1,088	97	342	13	1,540
October.....	895	648	29	405	13	1,095
November.....	840	609	4	395	11	1,019
December.....	627	437	3	337	8	785
Average.....	1,233	888	89	329	21	1,327

THE SALT INDUSTRY

Producers' sales of common salt or natural sodium chloride in Canada during 1946 totalled 537,985 short tons valued at \$3,626,165 compared with 673,076 short tons valued at \$4,054,720 in 1945. The decrease in tonnage was 20 per cent and the total value decrease was 10.6 per cent. Four provinces, Nova Scotia, Ontario, Manitoba and Alberta accounted for the total output, of which Ontario produced 82 per cent.

The Nova Scotian output is recovered by mining the underground rock salt deposits. In the other provinces brine wells furnish the supply.

Producers consumed 247,911 tons or 46 per cent in the manufacture of caustic soda and other chemicals. The sales of salt included 92,638 tons of table and dairy grades; 144,928 tons of common fine and 49,305 tons of common coarse. The balance of the shipments included salt for agriculture and for highway maintenance.

Nine plants were in operation in 1946. There were 713 employees, 620 males and 93 females, to whom \$918,566 was paid in salaries and wages. Process supplies cost \$138,630 and fuel and electricity cost \$597,112.

Canada exported in 1946 a total of 5,864 tons valued at \$116,483; during the same period 228,298 tons of salt valued at \$1,367,445 were imported; the apparent consumption was 760,419 short tons valued at \$4,877,127.

Caustic soda, chlorine and other chemicals are manufactured by Canadian Industries Limited at Windsor, Ontario, from brine obtained from the company's wells located at that point. This company also operates similar plants at Cornwall, Ontario, and Shawinigan Falls, Quebec, using dry salt brought from south-western Ontario deposits.

The Brunner, Mond Canada, Limited, located at Amherstburg, Ontario, manufactures soda ash from natural brine; calcium chloride is recovered as a by-product by this company.

Table 293.—Principal Statistics for the Salt Industry in Canada, 1937-1946

Year	Establishments	Employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies and containers	Gross value of products sold during year, including containers (f.o.b. works)
	Number	Number	\$	\$	\$	\$
1937.....	9	543	653,136	183,117	610,498	2,334,016
1938.....	9	562	786,720	278,711	607,175	2,489,719
1939.....	9	547	741,736	276,267	508,511	2,957,982
1940.....	9	586	836,506	321,589	539,179	3,322,250
1941.....	9	668	1,018,652	450,291	725,675	3,852,499
1942.....	9	675	1,114,574	536,649	882,599	4,593,003
1943.....	9	682	1,223,009	596,252	943,522	5,188,628
1944.....	9	710	1,302,143	652,126	846,298	4,786,084
1945.....	9	724	1,260,769	670,187	953,054	4,864,697
1946.....	9	713	918,566	597,112	993,304	4,480,839

NOTE.—Six plants in Ontario and 1 in each of Nova Scotia, Manitoba and Alberta.

Table 294.—Production of Salt in Canada, by Grades, 1945 and 1946

	1945			1946		
	Manu- factured	Sold	Value of salt sold (not including containers)	Manu- factured	Sold	Value of salt sold (not including containers)
	Tons	Tons	\$	Tons	Tons	\$
Table, dairy and pressed blocks.....	100,352	99,679	1,886,955	91,877	92,638	1,729,810
Common, fine.....	169,329	170,493	1,153,289	143,965	144,925	996,990
Common, coarse.....	48,430	50,889	412,762	50,061	49,305	461,443
Evaporated.....				350	340	4,411
Land salt.....	141	131	1,120	180	195	1,533
Other grades.....	3,502	3,396	51,358	2,366	2,668	37,941
Brine for chemical works (salt equivalent sold or used).....	348,743	348,488	549,236	247,788	247,911	394,037
Total of Above.....	670,497	673,076	4,054,720	536,587	537,985	3,626,165
Value of containers.....			809,977			854,674
Gross Value.....			4,864,697			4,480,839

Table 295.—Production of Salt in Canada, by Provinces, 1937-1946

Year	Nova Scotia		Ontario		Manitoba		Alberta	
	Tons	\$	Tons	\$	Tons	\$	Tons	\$
1937.....	47,865	216,401	407,701	1,539,599	3,391	43,465		
1938.....	44,950	194,759	388,130	1,657,140	2,920	34,979	4,045	46,035
1939.....	47,885	213,029	370,843	2,200,189	2,453	35,888	3,319	37,526
1940.....	42,495	220,328	412,401	2,371,780	3,076	45,731	6,742	185,430
1941.....	54,007	307,637	477,170	2,512,166	13,051	115,367	16,617	260,995
1942.....	50,199	317,798	558,407	2,793,328	22,706	397,101	22,360	335,960
1943.....	47,775	245,157	594,889	3,356,870	27,523	497,227	17,499	280,124
1944.....	38,809	281,482	603,806	2,906,117	27,267	488,776	25,335	397,646
1945.....	37,825	254,138	573,697	2,920,973	27,133	449,561	29,421	430,048
1946.....	38,371	329,579	441,679	2,408,279	26,166	446,472	31,769	441,835

NOTE.—Production = Producers' sales.

Table 296.—Total Production of Salt in Canada, 1930-1946

Year	Tons	\$	Year	Tons	\$
1930.....	271,695	1,694,631	1939.....	424,500	2,486,632
1931.....	259,047	1,904,149	1940.....	464,714	2,823,266
1932.....	263,543	1,947,551	1941.....	560,845	3,196,165
1933.....	280,115	1,939,874	1942.....	653,672	3,844,187
1934.....	321,753	1,954,953	1943.....	687,686	4,379,378
1935.....	360,343	1,880,978	1944.....	695,217	4,074,021
1936.....	391,316	1,773,144	1945.....	673,076	4,054,720
1937.....	458,957	1,799,465	1946.....	537,985	3,626,165
1938.....	440,045	1,912,913			

Table 297.—Salt Produced for Chemical Purposes(*) 1930-1946

Year	Quantity tons (2000 lb.)	Per cent of total salt output	Year	Quantity tons (2000 lb.)	Per cent of total salt output
1930.....	114,737	42	1939.....	187,958	44
1931.....	97,958	38	1940.....	224,009	48
1932.....	96,242	37	1941.....	258,711	46
1933.....	104,740	37	1942.....	327,548	50
1934.....	124,132	39	1943.....	346,145	50
1935.....	145,433	40	1944.....	370,199	53
1936.....	165,882	42	1945.....	348,488	52
1937.....	205,149	45	1946.....	247,911	46
1938.....	170,938	39			

(*) Used in the manufacture of chemicals by producers of salt.

Table 298.—Production in Canada, Imports, Exports and Consumption of Salt, 1945 and 1946

	1945		1946	
	Tons	Value	Tons	Value
Production.....	673,076	\$ 4,054,720	537,985	\$ 3,626,165
IMPORTS—				
Table salt.....			1,528	61,570
Salt, for the use of the sea or gulf fisheries.....	28,703	174,211	49,857	316,648
Salt, in bulk, n.o.p.....	88,822	443,192	136,092	627,932
Salt, n.o.p., in bags, barrels, etc.....	19,641	187,599	40,821	361,295
Total.....	137,166	805,002	228,298	1,367,445
Exports.....	5,313	105,494	5,864	116,483
Apparent Consumption.....	804,929	4,754,228	760,419	4,877,127

Table 298A.—Consumption of Salt in Specified Canadian Industries, 1944-1946

	1944		1945		1946	
	Quantity used	Cost at works	Quantity used	Cost at works	Quantity used	Cost at works
	lb.	\$	lb.	\$	lb.	\$
Acids, alkalies and salts—						
Brine (salt content).....	496,570,000	248,285	448,354,000	224,177	341,906,408	173,343
Dry salt.....	180,981,896	678,560	158,908,373	610,032	150,117,053	602,174
Abrasives—Artificial.....	686,000	3,898	512,000	3,426	664,000	4,517
Slaughtering and meat packing.....	138,042,530	943,941	139,522,583	960,008	118,458,540	803,438
Sausage and sausage casings.....	608,466	8,784	641,257	8,215	1,003,268	10,368
Animal oils and fats.....	340,000	1,723	268,000	1,376	460,000	2,335
Fish canning and curing (factories only).....	46,592,800	536,865	45,766,300	528,680	64,215,500	732,403
Foods, breakfast.....	1,654,457	14,185	1,677,108	14,484	1,728,977	14,427
Biscuits, confectionery, etc.....	2,207,959	22,352	2,346,005	24,217	2,540,695	34,250
Bread and bakery products.....	19,956,443	208,371	18,082,095	214,014	19,845,403	233,872
Macaroni, vermicelli, etc.....	96,572	1,059	136,365	1,579	224,794	2,382
Ice cream cones.....	8,132	58				
Included in the Biscuit Industry						
Foods, miscellaneous, including coffee, tea, etc.....	4,575,569	48,210	4,927,366	48,080	5,829,382	65,152
Butter and cheese.....		223,729		225,292		214,833
Cheese, processed.....	270,467	4,037	282,095	4,206	307,376	3,298
Condensed milk.....		297		545		279
Starch and glucose.....	475,245	2,291	537,947	2,613	772,375	3,921
Fruit and vegetable products.....	18,166,054	128,640	15,214,438	118,004	21,177,787	171,760
Breweries.....	800,790	6,894	871,480	7,276	981,146	8,460
Malt and malt products.....	331,830	1,963	412,811	2,384	455,187	2,689
Stock and poultry foods.....	22,516,000	182,653	23,258,000	172,350	27,308,000	260,576
Leather tanneries.....	18,178,471	98,314	18,527,094	99,359	21,446,362	116,670
Soaps and cleaning preparations.....	3,591,531	20,858	3,963,703	22,689	4,746,205	30,453
Dyeing, cleaning and laundry work.....	6,027,808	52,479	3,597,612	50,728	6,187,974	54,026
Dyeing and finishing of textiles.....	3,405,703	18,901	3,794,097	23,740	3,745,026	24,695
Artificial ice.....	687,200	5,419	530,290	5,542	418,800	8,407
Waterworks.....	5,111,700		5,133,800		7,308,000	
Pulp and paper mills.....	30,458,000	150,030	33,130,000	188,061	39,822,000	221,228
Dairy products, n.e.s.....	306,095	2,278	93,243	6,039	2,081	56
Miscellaneous wood products.....		17,500				
Woollen goods, n.e.s.....		1,000		664		1,819
Vegetable oil mills.....			10,255	86	11,895	96

Table 299.—Employees, Salaries and Wages in the Salt Industry in Canada, 1940-1946

Year	Number of Employees					Salaries	Wages	Total salaries and wages
	On salaries		On wages		Total employees			
	Male	Female	Male	Female				
1940.....	80	40	436	30	586	\$ 299,521	\$ 536,985	\$ 836,506
1941.....	106	42	490	30	668	361,661	656,991	1,018,652
1942.....	86	48	509	32	675	337,050	777,524	1,114,574
1943.....	82	53	495	52	632	366,555	856,454	1,223,009
1944.....	87	59	504	60	710	397,113	905,030	1,302,143
1945.....	93	54	517	60	724	367,132	893,637	1,260,769
1946.....	Administration		Workmen		713	Earnings		918,566
						Adminis- tration	Workmen	
	43	26	577	67		207,532	711,034	

Table 300.—Wage-Earners in the Salt Industry in Canada, by Months, 1945 and 1946

Month	1945				1946			
	Surface		Under-ground	Total	Surface		Under-ground	Total
	Male	Female	Male		Male	Female	Male	
January.....	461	56	31	548	522	62	32	616
February.....	464	61	30	555	509	65	34	608
March.....	462	60	30	552	520	63	36	619
April.....	469	64	34	567	532	58	38	628
May.....	470	54	32	556	541	59	35	635
June.....	480	59	35	574	544	61	37	642
July.....	498	55	33	586	559	66	36	661
August.....	493	62	30	585	565	71	35	671
September.....	489	71	25	585	565	72	37	674
October.....	513	71	28	612	563	72	37	672
November.....	517	66	32	615	540	77	38	655
December.....	496	50	32	578	533	76	38	647
Average.....	486	60	31	577	541	67	36	644

THE TALC AND SOAPSTONE INDUSTRY

Producers' shipments of crude and milled talc and soapstone totalled 29,353 tons valued at \$303,684 in 1946, compared with 27,088 tons worth \$294,888 in the previous year. Operators in Quebec shipped 14,914 tons of talc and soapstone worth \$150,004 and mines in Ontario sold 14,439 tons, mostly high-grade talc, valued at \$153,680.

Imports of talc and soapstone in 1946 amounted to 6,737 tons valued at \$150,972, and the exports of talc totalled 6,402 tons worth \$74,991.

The industry employed 87 persons to whom \$117,551 were paid in salaries and wages. Fuel and electricity cost \$25,401 and the expenditure for freight and process supplies amounted to \$38,167.

The Bureau of Mines, Ottawa, has given the following information on the talc industry:

"Talc and soapstone production in Canada comprises powdered material made from both these raw materials, sawn soapstone furnace blocks and bricks, and talc crayons. For a number of years there has been a steady production of these three classes of material centred in the Eastern Townships, Quebec, and of ground talc in the Madoc area, Hastings county, Ontario. The ground talc produced in Quebec consists of grey, slightly off-colour material, classed for statistical purposes as soapstone; that from Ontario is of prime white grade.

"The market value of ground talc varies widely and is dependent upon purity (determined by freedom from lime and gritty or iron-bearing substances, slip and colour), particle shape, and fineness of grinding, the specifications for which vary in the different consuming industries. Roofing and foundry talcs are the cheapest grades, the users being satisfied with coarser, grey or off-colour material, often soapstone powder or sawing dust, which sells at about \$6 to \$7 a ton, f.o.b. rail. Domestic grey talc suitable for roofing, rubber, and paper use, sold in 1946 for \$7.50 to \$10 a short ton, according to fineness; similar talc from Vermont was quoted at \$9.50 to \$11 in bulk. White talc from Madoc, Ontario, was quoted at \$9.50 for the coarser grades, \$10.50 to \$17.50 for finer mesh sizes, and \$44 for minus 400 mesh material, output of the last material being only a small part of the total. New York fibrous talc, 325 mesh, sold for \$12 to \$15. Imported European cosmetic talcs cost as high as \$80 per ton delivered."

Table 301.—Principal Statistics of the Talc and Soapstone Industry in Canada, 1944-1946

	1944	1945	1946
Number of firms.....	6	5	5
Number of employees—Administrative.....	14	11	11
Workmen.....	99	92	76
Total.....	113	103	87
Salaries and wages—Salaries..... \$	29,532	28,714	27,455
Wages..... \$	104,351	106,068	90,096
Total..... \$	133,883	134,782	117,551
Selling value of products (gross)..... \$	357,249	294,888	303,684
Cost of fuel and purchased electricity..... \$	27,642	27,978	25,401
Cost of freight and process supplies..... \$	40,523	51,604	38,167
Selling value of products (net)..... \$	289,084	215,306	240,116

Table 302.—Producers' Shipments of Talc and Soapstone(*), 1944-1946

	1944		1945		1946	
	Quantity	Value	Quantity	Value	Quantity	Value
	Tons	\$	Tons	\$	Tons	\$
Soapstone (Quebec) (†).....	19,013	204,127	14,225	153,694	14,914	150,004
Talc (Ontario).....	13,584	153,122	12,863	141,194	14,439	153,680
Total Canada.....	32,597	357,249	27,088	294,888	29,353	303,684

(*) Includes both crude and milled grades.

(†) Shipments by some firms usually include a considerable quantity of material classified as talc.

Table 303.—Production(*) of Talc and Soapstone in Canada, 1931-1946

Year	Tons	Value	Year	Tons	Value
		\$			\$
1931.....	21,916	157,083	1939.....	18,241	170,066
1932.....	13,275	159,038	1940.....	23,791	229,639
1933.....	16,829	190,836	1941.....	34,632	360,809
1934.....	15,532	180,777	1942.....	29,868	310,824
1935.....	15,301	171,532	1943.....	26,163	266,685
1936.....	16,587	177,270	1944.....	32,597	357,249
1937.....	15,939	163,814	1945.....	27,088	294,888
1938.....	13,814	144,848	1946.....	29,353	303,684

(*) Producers' shipments.

Table 304.—Imports and Exports of Talc, 1945 and 1946

	1945		1946	
	Tons	\$	Tons	\$
IMPORTS—Talc or soapstone.....	6,389	131,863	6,737	150,972
EXPORTS—Talc.....	7,363	100,114	6,402	74,991

Table 305.—Available Statistics on the Consumption of Ground Talc and Soapstone in Canada, 1945 and 1946

	1945	1946
(a) BY USES	Tons	Tons
Paints.....	5,885	5,445
Roofing.....	6,168	8,065
Pulp and paper.....	2,454	2,872
Rubber.....	2,656	2,529
Toilet and medicinal preparations.....	1,373	1,226
Electrical apparatus.....	199	259
Imported clay products.....	713	1,107
Soaps and cleaning preparations.....	735	683
Textiles.....	267	250
Insecticides.....	943	2,616
Polishes.....	23	31
Prepared foundry facings.....	10	17
Iron foundries.....	106	106
Plastics.....	10	.....
Adhesives.....	45	45
Linoleum.....	.....	19
Total.....	21,587	25,270
(b) BY PROVINCES		
Nova Scotia.....	59	52
New Brunswick.....	475	375
Quebec.....	8,133	9,204
Ontario.....	10,731	13,285
Manitoba.....	1,439	1,548
Saskatchewan.....	42	75
Alberta.....	67	83
British Columbia.....	641	648
Total.....	21,587	25,270

Table 306.—Number of Workmen, by Months, 1945 and 1946

Month	1945			1946		
	Surface	Underground	Mill	Surface	Underground	Mill
January.....	39	20	51	28	11	19
February.....	44	21	47	22	12	17
March.....	39	21	44	24	13	19
April.....	31	25	32	24	17	34
May.....	26	25	30	22	19	36
June.....	46	19	28	26	16	36
July.....	44	19	28	31	14	37
August.....	40	21	28	35	13	39
September.....	42	21	26	36	10	38
October.....	45	20	28	33	13	38
November.....	33	21	26	33	14	37
December.....	22	14	19	27	14	37
Average.....	38	21	33	29	14	33

MISCELLANEOUS INDUSTRIAL OR NON-METAL MINING INDUSTRIES

Included in this section are the following non-metallic minerals and mineral products:—

Barite	Graphite	Silica Brick
Corundum	Grindstones	Sodium Carbonate
Diamonds	Lithium Minerals	Sodium Sulphate
Diatomite	Magnesitic Dolomite	Strontium Minerals
Fluorspar	Magnesium Sulphate	Sulphur (Pyrites)
Garnet	Natural Mineral Waters	Volcanic Dust
	Phosphate	

Canadian operators producing certain industrial minerals, and who are usually relatively few in number, have been segregated for statistical purposes into a single group designated as the Miscellaneous Industrial or Non-metallic Minerals Industry. Minerals or primary mineral products produced (or deposits developed) by this industry during 1946 included barite, brucite, diatomite, fluorspar, graphite, grindstones, magnesitic-dolomite (crude and refined), mineral waters, phosphate, silica brick, sodium carbonate and sodium sulphate. For convenience, the sulphur content of pyrites shipped and sulphur recovered from smelter gas are recorded with the various miscellaneous minerals listed above; the value of sulphur production, however, is not included in the total for the miscellaneous non-metallic or industrial minerals as the value of this element is credited to the copper-gold-silver mining and non-ferrous smelting industries.

During the year under review the production of this group of industries had a gross value of \$4,248,107 compared with \$4,415,718 in 1945. Salaries and wages paid to 911 employees amounted to \$1,582,846. About \$1,389,098 was spent for the purchase of fuel, electricity, process supplies and containers.

Table 307.—Principal Statistics Relating to Miscellaneous Non-Metal Mining Industries in Canada, 1945 and 1946

	1945	1946
Number of plants.....	51	42
Number of employees—Administrative.....	119	102
Workmen.....	760	809
Total.....	879	911
Salaries and wages—Salaries..... \$	225,824	230,609
Wages..... \$	1,375,244	1,352,237
Total..... \$	1,601,068	1,582,846
Selling value of products (gross)..... \$	4,415,718	4,248,107
Cost of fuel and electricity..... \$	780,313	822,546
Cost of process supplies used..... \$	540,701	493,642
Cost of containers..... \$	34,923	35,863
Selling value of products (net)..... \$	3,059,781	2,859,099

Table 308.—Production of Miscellaneous Non-Metallic Minerals in Canada, 1945 and 1946

Item	Unit of measure	1945		1946	
		Quantity	Value	Quantity	Value
			\$		\$
Barite.....	ton	139,589	1,211,403	120,419	1,006,473
Corundum.....	ton	1,317	133,762	742	102,340
Diatomite.....	ton	46	1,238	90	2,532
Fluorspar.....	ton	7,369	233,708	8,042	237,491
Garnets (schist).....	ton			2	1,200
Graphite.....	ton	1,910	187,364	1,975	180,405
Grindstones.....	ton	225	10,870	295	17,450
Magnesite dolomite.....			1,278,596		1,225,593
Mineral waters.....	Imp. gal.	244,761	149,690	217,842	122,404
Phosphate.....	ton	299	4,356	57	869
Silica brick.....	M	4,208	317,263	2,902	197,804
Sodium carbonate.....	ton	286	3,146		
Sodium sulphate.....	ton	93,063	884,322	105,919	1,117,683
Total.....			4,415,718		4,212,244
Sulphur production(*).....	ton	250,114	1,881,321	234,771	1,784,666

NOTE.—Value of containers is excluded.

(*) Includes sulphur content of pyrites at its sales value and estimated figures for quantity and value of sulphur in smelter gases used for acid making or recovered as elemental sulphur, or in ammonium sulphate (direct.) General statistics relating to production of sulphur included with those of the copper-gold mining and non-ferrous smelting industries.

Table 309.—Workmen, by Months, in the Miscellaneous Non-metal Mining Industries in Canada, 1945-1946

Month	1945					1946				
	Mine			Mill		Mine			Mill	
	Surface		Under-ground	Male	Female	Surface		Under-ground	Male	Female
	Male	Female				Male	Female			
January.....	127	1	40	528	1	140	.....	60	548	1
February.....	134	1	42	502	1	149	.....	59	600	1
March.....	147	1	58	470	1	163	1	60	482	1
April.....	215	.....	61	456	1	195	1	66	543	1
May.....	225	.....	65	499	1	223	2	62	536	1
June.....	227	.....	71	470	1	218	2	68	550	1
July.....	250	.....	71	505	1	240	2	68	545	1
August.....	245	.....	74	507	1	234	2	74	462	1
September.....	194	.....	70	485	1	239	2	70	446	.....
October.....	236	.....	66	486	1	228	2	72	537	.....
November.....	196	.....	68	556	1	218	.....	75	580	.....
December.....	154	.....	64	497	1	166	.....	73	610	.....
Average.....	199	1	63	496	1	201	1	68	538	1

BARITE

(Text from the Annual Review by the Bureau of Mines, Ottawa)

In Nova Scotia, the Canadian Industrial Minerals Limited, the only shipper of barite in Eastern Canada in 1946, continued to expand its important operation at Walton, Hants county. Production came entirely from open-cast mining, but preparations for underground operations were made by the sinking of a three-compartment shaft to a depth of 400 feet from which it is expected some ore will be raised in 1947. A large program of plant expansion was completed, including the erection of a new power house, headframe, ore bin building, roll crusher house, and of housing for employees. Bleaching and beneficiation tests by the Bureau of Mines, Ottawa, in 1946 on ore from Walton property, showed that material heavily stained by iron can be bleached at a 325-mesh grind to yield a good white colour.

In British Columbia, the Mountain Minerals Ltd. shipped part of its production from its property at Parson, 25 miles south of Golden, to Pulverized Products Ltd., Montreal, for grinding, and the remaining part to the plant of Summit Lime Works, Crow's Nest, where it was ground for use in western glass works and in drilling mud. There was no production from the company's property near Brisco, in the Windermere Valley section, about 25 miles south of Parson, from which most of the barite shipped for ballast purposes in 1945 was taken.

In Ontario, the Woodhall Mines Ltd. resumed development work on the old Premier Langmuir property on Nighthawk River, Langmuir township, Porcupine area, under lease from Canada Baryte Mines. Considerable stripping, trenching and test-pitting was reported to have been done on two veins and 1,200 tons of crude ore was stockpiled.

The average unit price of domestic barite sold by primary producers in 1946 was \$6 40 to \$7.30 per short ton, f.o.b. mine. Ground, off-colour barite exported for oil-well drilling was sold for \$13.70 per ton f.o.b. Atlantic ports, and ground white for the pigment and filler trade averaged \$33 per ton f.o.b. mill.

In the United States, Georgia crude was quoted at \$8.50 to \$9.00 per long ton f.o.b. mines, and Missouri crude at \$8.25 to \$8.50. Missouri prime white, water-ground, floated and bleached sold for \$22.85 per ton, f.o.b. works.

In the American market, crude barite is usually sold on a penalty-premium basis, a content of 94 per cent BaSO_4 and less than 1 per cent iron (Fe_2O_3) being considered standard. A premium or penalty of 25 cents per ton is set for each per cent barium sulphate above or below 94% and a similar premium or penalty for each 0.1 per cent of Fe_2O_3 below or above 1 per cent.

DOMINION BUREAU OF STATISTICS

The United States imposes a duty of \$4 per ton on crude barite, and \$7.50 per ton on ground or otherwise manufactured material. Canadian imports are free of duty under the British preferential tariff, and there is no duty on barite used in drilling mud, or in the manufacture thereof. Otherwise, imports from countries other than the United Kingdom are subject to a duty of 25 per cent.

Table 310.—Production of Barite in Canada, 1914-1946

Year	Short tons	\$	Year	Short tons	\$
1914.....	612	6,169	1928.....	127	2,847
1915.....	550	6,875	1929.....	105	2,341
1916.....	1,368	19,393	1930.....	66	1,484
1917.....	3,490	54,027	1931.....	16	363
1918.....	640	10,165	1932.....		
1919.....	468	8,154	1933.....	20	60
1920.....	751	22,983	1939.....	323	3,639
1921.....	270	9,567	1940.....	338	4,819
1922.....	289	9,537	1941.....	6,890	74,416
1923.....	409	8,548	1942.....	19,667	188,144
1924.....	151	3,308	1943.....	24,474	279,253
1925.....	95	2,259	1944.....	118,719	1,023,696
1926.....	100	2,307	1945.....	139,589	1,211,403
1927.....	56	1,268	1946.....	120,419	1,006,473

Table 311.—Imports of Barite Into Canada, 1940-1946

Year	Tons	\$	Year	Tons	\$
1940.....	2,622	64,922	1944.....	1,824	47,913
1941.....	3,431	81,620	1945.....	1,150	32,531
1942.....	2,536	68,196	1946.....	1,547	42,904
1943.....	1,686	43,239			

Table 312.—Consumption of Barite in Canada, 1941-1946

	1941	1942	1943	1944	1945	1946
	Tons	Tons	Tons	Tons	Tons	Tons
(a) BY USES						
Paints.....	2,453	3,417	2,760	1,971	1,749	1,711
Rubber goods.....	830	557	351	288	473	461
Wall paper.....	13	18	15	20	22	
Glass.....	367	286	290	294	879	266
Miscellaneous.....	180	161	233	226	200	400
Total.....	3,843	4,439	3,649	2,799	3,328	2,838
(b) BY PROVINCES						
Nova Scotia.....	109	67	38	41	33	34
Quebec.....	1,483	1,639	1,191	893	931	1,123
Ontario.....	1,902	2,325	1,983	1,388	1,916	1,179
Manitoba.....	113	155	162	183	210	276
Saskatchewan.....	5	10	11	8	4	4
Alberta.....	96	93	128	119	105	106
British Columbia.....	135	150	136	167	129	116
Canada.....	3,843	4,439	3,649	2,799	3,328	2,838

NOTE.—Above figures do not include amounts used in oil drilling.

CORUNDUM

With completion of the treatment of tailings at the Craigmont property, Renfrew county, Ontario, at the end of October, 1946, corundum operations in Canada have come to an end for an indefinite period and the machinery and equipment at the property have been sold. Treatment

of the tailing was undertaken at the request of the United States Government as an emergency measure in October, 1944, arising from the difficulty of obtaining supplies of flour corundum from the Transvaal, South Africa. This type of corundum was then urgently needed for use in polishing high precision lenses for military optical instruments, and a 200-ton gravity mill was erected by Wartime Metals Corporation to treat the tailing. Shipments of concentrate were made to American Abrasive Company's plant at Westfield, Massachusetts, for grinding and for the preparation of fine powders. During the 25-month period of operation a total of 139,323 tons of tailings averaging 2.56 per cent corundum was treated, and 2,588 tons of concentrate containing 1,726 tons of corundum, having a nominal value of \$234,820 was shipped to Westfield. Since November, 1945, the Craigmont operations have been handled by the Department of Reconstruction and Supply, Ottawa.

Some corundum is still available in the known deposits, but, except in an emergency, production costs would be excessive. The Canadian consumption of corundum is small and supplies are obtained from foreign sources without difficulty.

Corundum (Al_2O_3), the oxide of aluminum, usually occurs as bronze-coloured barrel-shaped crystals. It is fairly heavy, and has a hardness (Mohs' scale) of 9, being the hardest known mineral next to diamond (hardness 10).

Prior to the war corundum was used chiefly for the abrasive grit in grinding wheels required for special types of work, but during the war most of it was used as flour for the polishing of lenses, and the coarse grain, for snagging wheels. In the United States, which is by far the leading consumer, a start was made shortly after the end of the war to revert to the use of corundum for the manufacture of precision grinding wheels.

The price of Canadian concentrate was Government controlled at about \$90 per ton. The prices of corundum and other ores imported into the United States were frozen as of August 20, 1943. South African 'crystal' corundum was \$107 and 'boulder' was \$74 per short ton delivered to the Westfield plant. U.S. prices of prepared grain and flour corundum vary considerably according to mesh size. These prices are $8\frac{1}{4}$ cents per pound for 6 to 60 mesh and $9\frac{3}{4}$ cents for 70 to 275 mesh. Flours range from 30 cents for 850 mesh to 70 cents for 2,600 mesh.

Production of corundum in 1946 amounted to 742 tons valued at \$102,340.

DIAMONDS

Although diamonds are not produced in Canada, they play a very important role in the mineral industry. In 1946 the diamond drilling on Canadian mineral deposits exceeded 1,500 miles. During 1946 the imports of black diamonds and borts for borers were appraised at \$4,002,457 compared with \$1,985,299 in 1945. Imports of unset white diamonds in 1946 were valued at \$6,103,856 compared with \$3,299,415 in the preceding year.

Table 313.—World Production and Sales of Diamonds, 1937-1946

Year	Production	Sales	£ Sterling
	Metric carats	£ Sterling	
1937.....	9,164,024	9,151,205	
1938.....	11,619,971	3,673,934	
1939.....	12,500,553	5,865,000	
1940.....	13,012,525	6,144,314	
1941.....	9,104,978	7,414,420	(Industrials..... 2,000,000 Cuttables..... 5,550,000)
1942.....	9,258,734	10,694,671	(Industrials..... 4,240,000 Cuttables..... 6,250,000)
1943.....	8,347,239	20,500,000	(Industrials..... 5,000,000 Cuttables..... 15,500,000)
1944.....	11,676,578	17,000,000 (estimate)	(Industrials..... 4,000,000 Cuttables..... 13,000,000)
1945.....	14,257,157	24,500,000 (estimate)	(Industrials..... 4,900,000 Cuttables..... 19,600,000)
1946.....	10,212,573	29,500,000 (estimate)	(Industrials..... 3,400,000 Cuttables..... 26,100,000)

DIATOMITE

There are more than 400 known deposits of diatomite in Canada. They are in the swamps and in the lake bottoms of northern Nova Scotia; in southern New Brunswick; in the Muskoka district, Ontario; and in various parts of British Columbia. The Tertiary fresh water deposits near Quesnel in the Cariboo district, British Columbia, are by far the largest known in Canada. They extend for many miles along the Fraser River, are compact, and are up to 40 feet thick. At Digby Neck, Nova Scotia, is the largest known Recent fresh water (swamp) deposit in Canada.

All the Canadian production of diatomite since 1939 has come from the aforementioned areas. The present producers are G. Wightman, who operates the deposit at Digby Neck, L. T. Fairey of Vancouver, who has been obtaining his output from Lot 1122 on the west bank of the Fraser River, north of Quesnel, and Cariboo Diatomite Company, which produces small quantities from a deposit near Alexandria, a few miles south of Quesnel for use in fertilizer dusting.

The Nova Scotia Department of Mines in 1946 investigated some of the deposits of the province, particularly those along Digby Neck. The Resources Development Board, Fredericton, New Brunswick, examined a number of diatomite deposits in the vicinity of Saint John and intends to submit bulk samples to consumers. Tests were continued on the suitability of diatomite in the vicinity of Quesnel, British Columbia, for fertilizer use and for insulation.

Prior to 1944, from 70 to 80 per cent of the diatomite consumed in Canada was used in the form of filter aids, mainly in the refining of cane sugar. The ammonium nitrate fertilizers in which diatomite is used as a dusting agent are made in Canada by The Consolidated Mining and Smelting Company of Canada Limited in its plant in Trail, British Columbia, and in another in Calgary, and by North American Cyanamid, Limited, in its plant in Welland, Ontario. The diatomite thus used is highly porous and when added to the nitrate it absorbs moisture, which prevents the nitrate from caking and ensures even spreading. Specifications call for uncalcined material of 325 mesh and less than 5 per cent moisture. The remainder of the diatomite was used chiefly as a filler in the paint, chemical, paper, rubber, soap, and textile industries; also in silver polish bases, and as an admixture in concrete. A small amount of lime-diatomite insulation bricks is made by a company in Toronto, which uses diatomite from Nova Scotia. Diatomite is being used in pressure filters in industrial plants in place of sand filters for the removal of disease-producing organisms.

The price of diatomite used in Canada for insulation varies from \$23 to \$40 per ton; for filtration from \$26 to \$75 per ton; and for fertilizer grades, \$28 to \$42 per ton. For material suitable for polishes, the price for small lots ranged up to \$200 a ton in 1946. Imported insulation bricks vary in price from \$85 to \$140 per 1,000, according to grade and density.

Table 314.—Production of Diatomite in Canada, 1932-1946

Year	Short tons	\$	Year	Short tons	\$
1932.....	1,496	29,509	1940.....	248	7,957
1933.....	1,789	36,648	1941.....	344	9,935
1934.....	1,372	54,910	1942.....	365	9,088
1935.....	823	33,140	1943.....	98	3,331
1936.....	615	13,650	1944.....	13	437
1937.....	643	18,606	1945.....	46	1,238
1938.....	398	13,842	1946.....	90	2,532
1939.....	301	10,388			

Table 315.—Consumption of Infusorial Earth by the Canadian Sugar Refining Industry, 1932-1946

Year	Tons	Value	Year	Tons	Value
		\$			\$
1932.....	1,289	73,309	1940.....	2,492	112,369
1933.....	1,254	70,191	1941.....	2,672	138,973
1934.....	1,281	69,116	1942.....	1,504	75,295
1935.....	2,154	96,600	1943.....	1,726	89,075
1936.....	2,183	98,954	1944.....	2,188	115,053
1937.....	2,293	95,632	1945.....	1,992	102,961
1938.....	2,454	101,473	1946.....	2,196	104,794
1939.....	2,410	105,711			

Table 316.—Consumption of Diatomaceous Earth in the Manufacture of Fertilizers, 1944-1946

Year	Tons	\$
1944.....	9,690	297,987
1945.....	6,444	274,968
1946.....	8,185	308,446

FLUORSPAR

Fluorspar is used chiefly as a powerful fluxing agent in the steel industry, and is used in small amounts in numerous other metallurgical industries. The next largest market is in the manufacture of hydrofluoric acid, which is used mainly in making artificial cryolite and aluminum fluoride for the aluminum industry. The fluorspar imported from Newfoundland is used for this purpose at Arvida, Quebec. The ceramic industry is next, and uses fluorspar as a fluxing and opacifying ingredient in glass and enamels. Uranium hexafluoride is used for the gaseous diffusion separation of the uranium isotopes U235 and U238 in the development of atomic energy.

Of considerable interest are the possible uses of elemental fluorine in the development of new industrial products and processes. A field of use is envisaged for fluorine in the chemical industry comparable to that of its closely related element chlorine. Only recently available on a commercial scale, compressed fluorine gas is being offered in small half-pound steel cylinders by a company in Philadelphia. The fluorine is produced in a specially designed electrolytic cell, using an electrolyte of anhydrous hydrofluoric acid and fused potassium bifluoride. Fluorine gas is evolved at the anode and hydrogen at the cathode. The fluorine is purified from associated small amounts of HF either by absorption of the latter in sodium fluoride or by chilling. Among the new compounds expected to be made available by the use of fluorine are: a liquid fluorinated non-inflammable and non-toxic hydrocarbon which can be used in place of mercury in the present mercury vapour boiler; sulphur hexafluoride gas of high insulating value for high voltages used in X-ray and nuclear physics work; and an extremely stable synthetic lubricating oil capable of withstanding high pressures and friction. Other suggested fluorine compounds include: insecticides, fungicides, germicides, fumigants, anesthetics, fire extinguishers and for proofing media, resins, and plastics.

Canadian trade journal quotations for metallurgical gravel, 85 per cent grade, fluorspar in 1946 remained at \$40 per ton, f.o.b. Toronto, and for ground, 97 per cent grade, \$66 to \$69.

In the United States, under an OPA ruling of August, 1943, the maximum price for metallurgical grade spar f.o.b. at consumer's plant was based on the effective CaF_2 content, plus either (a) rail freight from shipping point to consumer's plant, or (b) rail freight from Rosiclare, Illinois, to such plant, whichever is the lower. The base price was set as follows: 70 per cent or more effective units, \$33 per short ton; 65 to 70 per cent, \$32; 60 to 65 per cent, \$31; under 60 per cent, \$30. "Effective units" are computed as the CaF_2 content less $2\frac{1}{2}$ times the percentage of contained silica. This price ruling remained in effect through 1946. Acid grade, 97.5 per cent CaF_2 was quoted at \$37 per ton, plus freight. United States fluorspar had an average unit value of \$28 per ton and probably included a substantial proportion of acid and ceramic grades, neither of which is produced in Canada. Mexican material had an average unit value of \$16 per ton and is assumed to have been all of metallurgical grade.

The duty on metallurgical grade fluorspar entering the United States is \$5.625 a ton, and on acid and ceramic grades \$3.75 a ton. Fluorspar enters Canada duty free.

Table 317.—Principal Statistics of the Fluorspar Mining Industry in Canada, 1945 and 1946

		1945	1946
Active firms.....	No.	7	4
Employees—Administrative.....	No.	11	8
Workmen.....	No.	63	64
Total.....	No.	74	72
Salaries and wages—Salaries.....	\$	17,035	15,594
Wages.....	\$	82,610	76,080
Total.....	\$	99,645	91,674
Gross value of production.....	\$	233,708	237,491
Cost of fuel and electricity.....	\$	14,003	16,648
Process supplies used.....	\$	9,312	9,729
Net value of production.....	\$	210,393	211,114

Table 318.—Production of Fluorspar in Canada, 1932-1946

Year	Short tons	\$	Year	Short tons	\$
1932.....	32	464	1940.....	4,454	59,317
1933.....	73	1,064	1941.....	5,554	97,767
1934.....	150	2,100	1942.....	6,199	146,039
1935.....	75	900	1943.....	11,210	318,424
1936.....	75	900	1944.....	6,924	217,701
1937.....	150	2,550	1945.....	7,369	233,708
1938.....	217	3,906	1946.....	8,042	237,491
1939.....	240	4,995			

Table 319.—Imports of Fluorspar into Canada, 1932-1946

Year	Tons	\$	Year	Tons	\$
1932.....	1,009	22,965	1940.....	30,312	628,719
1933.....	2,219	21,165	1941.....	26,539	567,656
1934.....	7,220	56,628	1942.....	47,784	1,046,526
1935.....	11,591	92,775	1943.....	77,436	1,738,669
1936.....	11,194	95,268	1944.....	37,100	840,309
1937.....	11,444	158,082	1945.....	20,517	530,670
1938.....	15,057	212,131	1946.....	31,313	717,094
1939.....	16,322	258,796			

Table 320.—Consumption of Fluorspar in Canada, 1942-1946

	1942	1943	1944	1945	1946
	Tons	Tons	Tons	Tons	Tons
(a) BY USES					
Steel.....	20,133	20,790	20,024	19,462	13,805
Glass.....	231	273	376	302	145
Enamelling and glazing.....	434	216	243	200	220
Heavy chemicals.....	3,599	2,680	3,113	3,600	3,388
Non-ferrous smelters.....	22,493	39,396	33,643	12,830	10,972
Ferro-alloys.....	853	1,407	104	792	1,431
White metal alloys.....	13	23	30	20	34
Miscellaneous.....	13	137	99	100	.....
Total.....	47,769	64,922	57,632	37,304	29,995
(b) BY PROVINCES					
Nova Scotia.....	8,898	7,916	9,112	7,390	6,612
Quebec.....	21,471	38,990	32,745	13,300	11,098
Ontario.....	15,565	17,309	15,371	16,266	12,058
Manitoba.....	212	210	165	170	205
Alberta.....	138	151	118	70	.....
British Columbia.....	1,485	346	121	110	22
Total.....	47,769	64,922	57,632	37,304	29,995

GARNET

The Niagara Garnet Company was the only garnet producer in Canada in 1946. About 60 tons of garnet ore was mined by the company from the deposit near River Valley in Dana township, Ontario, and was shipped 25 miles southeast to the mill at Sturgeon Falls. The garnet ore is crushed and concentrated to about 95 per cent garnet grain and is then finely pulverized into flour grades for use in the grinding of lenses and in the optical trade. About $1\frac{1}{2}$ tons of flour grade was shipped to plants in the United States. About a ton of flour was on hand at the end of 1946 and nearly 100 tons of broken ore at mine and mill.

Over 85 per cent of the world output of garnet comes from North Creek, New York, and the product is regarded as the world standard garnet. Production in the United States in 1946 was about 7,700 tons compared with 6,306 tons in 1945. The largest producer in the United States uses the "Sink-float" process in preliminary stages to eliminate the coarse tails, and uses a heat treatment process to improve the grain in the final concentrate.

Garnet, crushed and suitably graded as to size, is used for making abrasive-coated papers and cloth, which in turn are used mainly in the wood working (hard woods), and to a lesser extent in the shoe leather industries. The specifications for garnet for this use are somewhat exacting. Few if any of the hundred or more garnet deposits so far examined in Canada fulfil all of the requirements. Garnet is used to a minor extent for sandblasting, and for surfacing plate glass. Garnet superfine (flour) grades are used as a partial substitute for corundum flour, which is used for polishing optical lenses. For this purpose, several hundred tons of garnet were probably used in the United States in 1946.

Prices of ungraded concentrate suitable for sandpaper range from \$60 to \$85 a ton, and flours from 6 cents a pound for 275 mesh to 65 cents a pound for 5 and 10 micron.

GRAPHITE

Flake graphite is found in many parts of the Canadian Shield, chiefly in gneisses and crystalline limestone. Occurrences of flake graphite are known also in Manitoba and British Columbia, but have attracted little interest. Bodies of amorphous graphite near Saint John, New Brunswick, were worked on a small scale many years ago. Otherwise, production has been confined to adjacent sections of western Quebec and eastern Ontario, in the general Ottawa region, where about 12 mines and mills were operated at various times in the early years of the industry.

Production from the Black Donald continued to come mainly from the re-treatment of old mill tailings recovered from the lake alongside the workings by pumping or power shovel, the remainder being mill feed provided by lump ore salvaged from old surface dumps. Preparations for renewal of underground mining from the old Ross shaft were started early in 1946 and a stoping drift was opened on the 290-foot level to develop an orebody discovered some years ago by drilling. This orebody is 150 feet long and 6 to 8 feet wide, and contains 25 to 30 per cent graphite. Mining and stock-piling of new ore was commenced in August, and by November about 1,500 tons had been raised. Proven ore reserves at the end of 1946 was reported as 7,500 tons, and possible reserves at 10,000 tons. Old tailings reserves, which henceforth will be drawn on only during the summer, are estimated at 10,000 tons. The mill runs three 8-hour shifts, 7 days a week, and has treated up to 50 tons per day of salvaged ore and tailings. The expected rate on newly mined ore is 35 tons per day. Recovery of finished products comprising natural flake, powdered flake, and amorphous in 1946 was about 5 tons per day. Total labour force employed was 22 men, 12 in mining, and 10 in the mill. The mill treated about 13,500 tons, with a recovery of 11.7 per cent carbon per ton.

Trade journal quotations for flake graphite in the United States in 1946 ranged from 16 cents per pound for best quality, down to 3 cents per pound for the lowest grade. Crude Ceylon lump, chip, and dust ranged from 12 cents to 5 cents per pound, according to carbon content. Madagascar crucible flake sold for 10 to 11 cents per pound, nominal. Mexican crude amorphous was quoted at \$14 to \$30 per ton, f.o.b. New York, according to grade.

The duty on graphite entering the United States under the general tariff is 5 per cent ad valorem on natural amorphous and artificial grades, and 15 per cent on crystalline lump, chip, and dust grades. The Canadian tariff is as follows: graphite, not ground or otherwise manufactured, British, free; intermediate (including the United States), $7\frac{1}{2}$ per cent ad valorem; general, 10 per cent; on ground and manufactures of, including foundry facings, but not crucibles, British, 15 per cent; intermediate, $22\frac{1}{2}$ per cent; general, 25 per cent. Graphite crucibles enter Canada free under the British Preferential Tariff, under other tariffs the duty is 15 per cent ad valorem.

Table 321.—Mine Production (Sales) of Graphite in Canada, 1932-1946

Year	Short tons	\$	Year	Short tons	\$
1932.....	346	18,483	1940.....	1,382	94,038
1933.....	405	18,367	1941.....	1,644	132,924
1934.....	1,518	71,424	1942.....	1,192	117,904
1935.....	1,782	79,781	1943.....	1,903	197,431
1936.....	2,045	88,812	1944.....	1,582	179,457
1937.....	2,511	125,343	1945.....	1,910	187,364
1938.....	723	41,590	1946.....	1,975	180,405
1939.....	1,101	61,684			

Table 322.—Consumption of Graphite or Plumbago in Canada by Industries, 1945-1946

Industry	1945		1946	
	Quantity	Value	Quantity	Value
	Tons	\$	Tons	\$
Paints and varnishes.....	78	8,760	77	9,724
Polishes.....	43	5,591	46	5,640
Foundries.....	551	65,922	431	62,275
Acids and salts.....	117	37,438	124	36,675
Primary iron and steel.....	526	53,955	969	82,830
Miscellaneous non-metallies.....	135	16,555	138	11,968

GRINDSTONES, PULPSTONES AND SCYTHESTONES

Material suitable for these stones occurs in certain sandstone beds in Nova Scotia, New Brunswick, and on the coast of British Columbia. Many years ago the output was considerable, but most of the known beds have been depleted and the demand for natural stones has decreased.

No natural pulpstones or scythstones were produced in Canada in 1946, but a total 295 tons of grindstones valued at \$17,450 were shipped from New Brunswick and Nova Scotia. Pulpstones were last produced in 1937 by J. A. and C. H. McDonald Company from Gabriola Island near Nanaimo and Vancouver Island. Good pulpstones are in demand, particularly for use in the large magazine grinders, but known Canadian deposits containing thick beds of sandstone of the proper quality appear to have been worked out. There is also an increasing competition from Canadian-made artificial segmental pulpstones, mainly of silicon carbide grit, and about 645 of these stones are in use and in stock in the various Canadian pulp mills. The imported natural pulpstones come mainly from West Virginia.

Table 323.—Production of Grindstones, Pulpstones and Scythstones in Canada, 1932-1946

Year	Tons	\$	Year	Tons	\$
1932.....	328	15,735	1940.....	341	14,543
1933.....	498	21,919	1941.....	188	11,500
1934.....	987	46,478	1942.....	216	10,000
1935.....	708	34,010	1943.....	164	6,225
1936.....	569	24,724	1944.....	225	12,000
1937.....	412	21,429	1945.....	225	10,870
1938.....	306	16,198	1946.....	295	17,450
1939.....	304	15,278			

Table 324.—Production of Natural Abrasive Stones, 1945 and 1946

	Grindstones	
	Tons	\$
1945		
Nova Scotia.....	10	600
New Brunswick.....	215	10,270
Canada.....	225	10,870
1946		
Nova Scotia.....	295	17,450
New Brunswick.....	295	17,450
Canada.....	295	17,450

Table 325.—Consumption of Pulpstones by the Canadian Pulp and Paper Industry, 1932-1946

Year	Number for 2 ft. wood	Value	Number for 2-5 ft. wood	Value	Number for 4 ft. wood	Value
		\$		\$		\$
1932.....	210	65,450	139	46,436	222	249,373
1933.....	321	98,475	95	31,945	199	223,635
1934.....	378	103,811	84	29,680	268	292,359
1935.....	417	116,501	52	20,297	237	243,805
1936.....	463	120,227	61	19,478	253	281,265
1937.....	392	123,568	84	21,700	280	352,084
1938.....	306	92,822	37	13,351	186	238,488
1939.....	242	60,622	60	22,443	203	238,620
1940.....	311	96,957	110	49,899	163	257,628
1941.....	295	127,349	77	35,843	97	215,913
1942.....	237	100,466	53	23,898	94	208,986
1943.....	197	102,888	54	20,000	66	151,411
1944.....	187	89,133	57	34,865	76	193,396
1945.....	191	117,585	33	14,132	114	271,108
1946.....	233	121,705	41	16,868	139	349,866

LITHIUM MINERALS

Amblygonite, spodumene, and lepidolite are the chief lithium minerals of commerce; their ores contain, respectively, about 8, 6 and 4 per cent of lithium oxide. Spodumene is in greatest supply, and is the base raw material for the manufacture of many lithium salts, lithium metal, and alloys. Amblygonite has similar uses, but is scarcer and more expensive. Lepidolite, or lithia mica, is employed mainly in the natural state as a batch ingredient in glass. The occurrence of all three minerals is confined to pegmatite dykes of a definite type, which usually have a localized, regional distribution and often carry, also, important amounts of beryl and tantalite-columbite. In some cases, such dykes have been worked for the recovery of all of these minerals.

There has been no recorded production of lithium minerals in Canada since 1937, when 32 tons of amblygonite and spodumene valued at about \$1,700 was shipped, and little if any lithium ore is known to be used or required for any purpose in the Dominion. Thus, an outside market would have to be found for any production. Considerable development work has been done in recent years, however, on deposits in the Pointe du Bois area in southeastern Manitoba; and in the three years ended 1944 increased interest was shown in the commercial possibilities of lithium deposits in other sections of that province, though activities have been confined to exploratory drilling. Some attention has been given, also, to lithium-bearing deposits in the Yellowknife-Beaulieu area in the Northwest Territories.

Lithium ores and compounds early became of strategic importance in the present war, and to conserve supply for defence needs the United States Government placed both under allocation control in 1942. Government assistance also was given to the establishment of two spodumene mills, one in North Carolina, and the other in South Dakota. These measures resulted in a considerable easing of the general supply situation in 1944.

Total production in Canada during the active period 1925-1937, inclusive, is estimated at about 250 tons, and comprised lepidolite, spodumene, and amblygonite. Most of the material was exported to the United States.

The United States and Southwest Africa have been the two leading producers of lithium ores in recent years, with the former probably supplying well over 50 per cent of the annual total, and possessing the largest reserves. Production consists mainly of spodumene and amblygonite, and in the United States has come chiefly from the Black Hills region in South Dakota. An additional important source of lithia in the United States is lithium-sodium phosphate, recovered from the brine of Searle's Lake, at Trona, California, which at present furnishes nearly 50 per cent of the total American lithia production. Shipments of lithium ores and compounds in the United States in 1944 reached an all-time high of 13,319 tons, a 63 per cent increase over the previous year.

There are no plants in Canada for the chemical treatment of lithium ores. Most of the world production marketed prior to the war was treated by a few large chemical firms specializing in the business, the principal plants being in the United States, Great Britain, Germany and France. Such firms usually purchased their requirements under individual contract, and there has thus been little in the way of an open market, price quotations given in trade journals being merely nominal. Some of the larger consumers own and operate their own mines.

MAGNESITE AND BRUCITE

Magnesitic dolomite, a rock composed of an intimate mixture of magnesite and dolomite, is quarried at Kilmar, Argenteuil county, Quebec, by Canadian Refractories Limited, and is processed for use as refractory products and to a minor extent as fertilizer material.

Brucitic limestone, a rock composed of granules of the mineral brucite (magnesium hydroxide) thickly distributed throughout a matrix of calcite, is quarried near Wakefield, Quebec, by Aluminum Company of Canada, Limited, and is processed for the recovery of magnesia and lime. The magnesia is used for making magnesium metal, basic refractories, and fertilizers.

The value of refractory products made from magnesitic dolomite and brucitic limestone reached a new peak in 1946. Canadian Refractories Limited, the principal producer of these materials, was carrying out an extensive program of enlargement and modernization of its production facilities at Kilmar. This includes the installation of a sink-float plant and a 245-foot rotary kiln. The latter will possibly be in operation in 1947.

Magnesite deposits occur in British Columbia and in Yukon. The most important of these, at Marysville, British Columbia, between Cranbrook and Kimberley, is owned by The Consolidated Mining and Smelting Company of Canada, Limited. Considerable silica and alumina occur as impurities in this magnesite. The company, however, has devised a flotation method to remove the greater part of these impurities, but there has been no commercial production. Other magnesite deposits in British Columbia and Yukon are of limited extent or are too far from transportation to be of economic interest at present. Some deposits of earthy hydromagnesite near Atlin and Clinton in British Columbia have been worked at various times on a small scale, but there has been no production in recent years.

There are large deposits of brucite limestone at Bryson, Quebec, and at Rutherglen, Ontario, and there is a small deposit on West Redonda Island in British Columbia.

Table 326.—Production of Magnesitic Dolomite (Calcined) in Canada, 1937-1946

Year	Value	Year	Value
	\$		\$
1937.....	677,207	1942.....	1,059,374
1938.....	(b) 420,261	1943.....	1,260,056
1939.....	474,418	1944.....	1,139,281
1940.....	897,016	1945.....	1,278,596
1941.....	831,041	1946.....	1,225,593

(a) 1942 and following years include the value of brucite shipped.

(b) Represents value of magnesite (dead-burned, etc.) only, whereas the values for years immediately preceding include the value of some end products containing imported material; for this reason the 1938 to 1946 values are not entirely comparable with those for preceding years.

Table 327.—Magnesite and Dolomite Used in the Canadian Primary Iron and Steel Industry, 1939-1946

Year	Calcined Dolomite		Dolomite, Crude		Magnesite	
	Short tons	Value	Short tons	Value	Short tons	Value
		\$		\$		\$
1939.....	14,858	99,838	40,592	78,904	11,401	351,680
1940.....	21,949	136,360	59,284	123,429	13,673	506,032
1941.....	21,608	160,602	71,087	159,037	18,127	682,742
1942.....	22,550	179,427	79,091	225,393	20,665	786,321
1943.....	10,310	99,740	78,746	243,793	19,427	744,716
1944.....	8,516	125,990	134,907	296,631	18,665	740,450
1945.....	6,146	111,581	110,478	266,236	18,249	755,958
1946.....	3,788	66,473	87,217	230,384	13,049	546,396

Table 328.—Calcined Magnesite Used by the Artificial Abrasives and Abrasive Products Industry in Canada, 1937-1946

Year	Tons	Value	Year	Tons	Value
		\$			\$
1937.....	484	29,242	1942.....	398	58,648
1938.....			1943.....	150	12,164
1939.....	121	7,735	1944.....	771	103,591
1940.....	302	19,331	1945.....	840	96,780
1941.....	809	77,508	1946.....	1,676	187,250

MAGNESIUM SULPHATE

Natural hydrous magnesium sulphate (Epsom Salts or Epsomite) occurs in deposits in lake bottoms or in solution in brine lakes in British Columbia. In Saskatchewan, it is found associated with sodium sulphate. Attempts have been made to produce refined salts, and a number of years ago there was a considerable production from several of the "lakes" in British Columbia. Experimental shipments have been made also from one of the lakes in Saskatchewan.

Canada's output of magnesium sulphate has come chiefly from a deposit in Basque, British Columbia, production from which was discontinued in the autumn of 1942. The salt was refined at Ashcroft, 15 miles south of the deposit, and the grade of the product was high. The refinery, now owned by Ashcroft Salts Company, Limited, had a capacity of 10 tons of salt a day. There are a number of other occurrences in British Columbia, near Clinton, north of Kamloops, and in Kruger's Pass, south of Penticton.

In Saskatchewan, two lakes south of Wiseton contain brines high in magnesium sulphate, and Muskiki Lake, just north of Dana, contains brine high in magnesium and sodium sulphates, which at certain times of the year crystallizes into a bedded deposit with layers of both salts.

In the chemical industries, Epsom salt has many uses. It is employed for tanning and in dyeing, and for textile and medicinal use. Magnesium sulphate is used in the paper industry for weighting paper. In the sole leather industry it is used to obtain a clean shiny cut, and it also helps to retain moisture in the leather and increases its weight. Magnesium salt is used to a small extent in the dyeing industry. In some cases it is used in the treatment of leather to increase the fastness of the colour in washing. It is used extensively and in large quantities in medicine and for various purposes in the manufacture of textiles. In bleaching wool, magnesium sulphate is added to destroy the corrosive effect of sodium peroxide. It is also used for weighting textile fabric, especially silk. Mixed with gypsum and ammonium sulphate, it is used in the manufacture of non-inflammable fabrics.

Table 329.—Production of Natural Magnesium Sulphate in Canada(*), 1937-1946

Year	Tons	Value	Year	Tons	Value
		\$			\$
1937.....	727	14,456	1942.....	1,140	38,760
1938.....	470	9,400	1943.....		
1939.....	550	9,900	1944.....		
1940.....			1945.....		
1941.....	265	7,343	1946.....		

(*) Produced entirely in British Columbia.

Table 330.—Imports of Magnesium Sulphate into Canada, 1939-1946

Year	Tons	Value	Year	Tons	Value
		\$			\$
1939.....	1,951	56,648	1943.....	3,379	137,372
1940.....	2,211	86,090	1944.....	2,684	108,795
1941.....	2,729	109,022	1945.....	2,545	101,695
1942.....	1,688	68,532	1946.....	3,463	132,342

Table 331.—Available Data on Consumption of Magnesium Sulphate in Canada, 1942-1946

Industry	1942	1943	1944	1945	1946
	Tons	Tons	Tons	Tons	Tons
Leather tanneries.....	891	935	932	1,013	1,019
Medicinals.....	539	577	562	828	645
Fertilizers.....	790		54	431	57
Textiles.....	55	330	350	44	28
Miscellaneous.....	46	60	119		
Total Accounted For.....	2,321	1,902	2,017	2,316	1,749

NATURAL MINERAL WATERS

Production of natural mineral waters in past years originated in Ontario and Quebec. Some of the more prominent Canadian mineral waters possessing special therapeutic or hygienic properties include the following: in Quebec, the Abenakis springs on the St-François river in Yamaska county, Pottou Springs in Brome county and the Columbia spring at l'Épiphanie. In Ontario, saline, sulphur and gas springs occur at Caledonia Springs and at Carlsbad Springs, near Ottawa; the waters range from alkaline to strongly saline. St. Catharines, near Niagara, is one of the oldest Canadian mineral water resorts and sulphur waters are found at the Preston mineral springs in Waterloo county. The most famous of all Canadian springs is undoubtedly the group of hot sulphur springs at Banff, Alberta. In British Columbia, the Harrison Hot Springs in Fraser Valley and the Halcyon Hot Springs on Arrow Lake are noted for their curative properties.

There were 18 firms reporting production of natural mineral waters in the Dominion in 1945. Fifteen of these firms were in Quebec and 3 in Ontario.

Table 332.—Shipments of Natural Mineral Waters from Canadian Springs, 1937-1946

Year	Quebec		Ontario		Canada	
	Imp. gal.	\$	Imp. gal.	\$	Imp. gal.	\$
1937.....	198,319	19,697	26,700	889	225,019	20,586
1938.....	159,893	19,033	28,416	2,586	188,309	21,619
1939.....	104,629	17,503	19,140	1,602	123,769	19,105
1940.....	109,025	18,466	31,638	2,426	140,663	20,892
1941.....	144,441	58,062	36,623	14,469	181,064	72,531
1942.....	129,062	60,316	28,023	14,189	157,085	74,505
1943.....	125,605	61,793	14,006	5,748	139,611	67,541
1944.....	148,965	88,113	7,185	805	156,150	88,918
1945.....	236,476	148,714	8,285	976	244,761	149,690
1946.....	211,842	121,526	6,000	878	217,842	122,404

PHOSPHATE

(Text from the Annual Review of the Bureau of Mines, Ottawa)

All of the output in 1946 came from the province of Quebec. For many years Electric Reduction Company, Buckingham, Quebec, has purchased most of the output for use in the production of elemental phosphorus and of various phosphorus compounds. The company obtains most of its requirements, however, from Florida. Over 98 per cent of the Canadian imports of rock phosphate come from Florida and Montana and the remainder from North Africa and from Curacao, Netherlands West Indies. The Curacao material is low in fluorine and is used in stock feeds.

In Canada, the apatite is frequently associated with the productive phlogopite mica deposits of the general Ottawa region in Ontario and Quebec. In certain areas of Precambrian pyroxenite, the host rock of the phlogopite, are substantial bodies of apatite that contain little or no mica. These, in the past, were mined for straight phosphate and have accounted for the greater part of the recorded production. In more recent years, the small tonnages of apatite sold have been by-product material taken out in the course of mica-mining operations. During the war, some renewed interest was taken in a few of the larger and richer apatite properties that were worked in the peak years (1878-1894) of the phosphate industry, and this accounted for the slight rise in production in the 1941-1943 period.

Rock phosphate of Permo-Triassic age occurs along the Rocky Mountain Divide, notably in the vicinity of Crow's Nest, British Columbia, where a few thousand tons was mined about 1930 by the Consolidated Mining and Smelting Company of Canada, Limited. The material proved to be too low-grade to be of present economic interest and rock for the company's fertilizer plant at Trail, British Columbia, is obtained from richer deposits in Montana.

Overall average f.o.b. price of the United States production in the first half of 1946 was \$4.24 per long ton. The price paid in 1946 for Canadian apatite delivered at plant continued to be \$16 per short ton for material of 80 per cent B.P.L. grade, with a penalty or premium of 20 cents per unit below or above that figure.

Table 333.—Production of Phosphate in Canada, 1937-1946

Year	Short tons	\$	Year	Short tons	\$
1937.....	100	900	1942.....	1,264	17,431
1938.....	208	1,886	1943.....	1,451	18,385
1939.....	157	1,712	1944.....	482	6,716
1940.....	358	4,039	1945.....	299	4,356
1941.....	2,487	33,376	1946.....	57	869

Table 334.—Imports of Phosphate Rock into Canada, 1937-1946

Year	Tons	Value	Year	Tons	Value
		\$			\$
1937.....	113,971	453,599	1942.....	271,373	1,053,229
1938.....	128,409	455,697	1943.....	260,846	1,085,080
1939.....	124,900	477,317	1944.....	388,247	1,710,378
1940.....	165,558	663,554	1945.....	317,695	1,450,580
1941.....	237,029	863,833	1946.....	373,677	2,164,841

Table 335.—Consumption of Phosphate Rock in Canada, 1945 and 1946

	1945	1946
	Tons	Tons
(a) By Uses		
Fertilizers.....	365,195	372,914
Chemicals.....	26,804	17,861
Steel furnaces.....	1,895	1,989
Refractories.....	154	153
Miscellaneous.....		7,100
Total.....	394,048	400,017
(b) By PROVINCES		
Quebec.....	93,751	85,871
Ontario.....	69,060	70,933
British Columbia.....	231,237	243,213
Total.....	394,048	400,017

SILICA BRICK

The manufacture of silica brick for refractory use was confined to the plants of the Dominion Steel and Coal Company, Limited, Sydney, Nova Scotia, and the Algoma Steel Corporation Limited, Sault-Sainte-Marie, Ontario. The brick manufactured by both these firms are processed from crushed silica rock and are utilized in furnace construction and repairs.

Table 336.—Production of Silica Brick in Canada, 1937-1946

Year	M	\$	Year	M	\$
1937.....	3,744	181,126	1942.....	4,273	263,006
1938.....	1,788	100,403	1943.....	4,165	295,505
1939.....	2,493	124,807	1944.....	3,997	312,092
1940.....	3,438	182,786	1945.....	4,208	317,263
1941.....	4,111	238,433	1946.....	2,902	197,804

NOTE.—Quantities are shown as 9" equivalent.

SODIUM CARBONATE (NATURAL)

Deposits of natural sodium carbonate in the form of "Natron" (sodium carbonate with 10 molecules of water) and of brine occur in a number of small "lakes" throughout the central part of British Columbia, chiefly in the Clinton Mining Division and in the neighbourhood of Kamloops. As the deposits are far from the main eastern Canadian markets, production is restricted to the requirements of consumers within economical rail haul.

Sodium carbonate has many industrial uses, notably in the manufacture of glass and soap, in the purification of oils, in the production of aluminum, in the flotation of minerals, in the refining of metals, and in the production of caustic soda.

Table 337.—Production of Sodium Carbonate (Natural) in Canada, 1937-1946

Year	Tons	\$	Year	Tons	\$
1937.....	286	2,574	1942.....	256	2,048
1938.....	252	2,268	1943.....	468	5,148
1939.....	300	2,400	1944.....	44	484
1940.....	220	1,760	1945.....	286	3,146
1941.....	186	1,488	1946.....		

SODIUM SULPHATE (NATURAL)

(Text from the Annual Review of the Bureau of Mines, Ottawa)

Sodium sulphate occurs as crystals or in the form of highly concentrated brines in many lakes and deposits throughout Western Canada. From these, hydrated sodium sulphate, known as Glauber's salt, and anhydrous sodium sulphate, known to the trade as "salt cake", are produced in Canada.

Investigations of the sodium sulphate deposits in Western Canada were made by the Mines Branch, predecessor organization of the Bureau of Mines, Ottawa, in 1921, and over 120,000,000 tons of hydrous salts were proved in the few deposits examined in detail. The material is in the form of the hydrous salt (mirabilite or Glauber's salt) which contains 55.9 per cent of water of crystallization that is removed before marketing. For the small amount of the hydrous product that is marketed as such, clean crystals are harvested and stock-piled, after which they are screened to various sizes, bagged and shipped.

Anhydrous sodium sulphate is also obtained as a by-product from the manufacture of hydrochloric acid and as a by-product from the viscose industry. The latter source of supply is likely to increase rapidly as the demand for the other products of the viscose industry expands. Thus, unless the anhydrous material from western Canada can be made of such a high degree of purity that consumers will be willing to pay a premium based on the sodium sulphate content, it will be unable to compete in the export market with the by-product material.

Glauber's salt is used widely in the chemical industries and the demand is increasing. Sodium sulphate is used chiefly in the sulphate process for the manufacture of kraft pulp, and large amounts are used at Copper Cliff in the smelter. It is used in the glass, dye and textile industries and to a smaller extent for medicinal purposes, and for tanning.

The price of natural sodium sulphate from the deposits in Western Canada in 1946 was quoted at \$10.00 per short ton in carload lots f.o.b. plant. The delivered price at pulp mills, which are mostly distant from producing centres, is considerably higher.

Table 338.—Principal Statistics of Sodium Sulphate Mining Industry, 1945 and 1946

	1945	1946
Active firms.....No.	5	4
Producing plants.....No.	5	4
Employees—Administrative.....No.	25	13
Workmen.....No.	131	154
Total Employees.....No.	156	167
Salaries.....\$	31,072	32,259
Wages.....\$	231,297	219,628
Total Salaries and Wages.....\$	262,369	251,887
Gross value of production.....\$	884,322	1,118,783
Cost of fuel and electricity.....\$	226,109	254,450
Cost of process supplies and containers.....\$	27,473	66,423
Net Value of Production.....\$	630,740	797,910

Table 339.—Production of Natural Sodium Sulphate(*) in Canada, 1937-1946

Year	Short tons	\$	Year	Short tons	\$
1937.....	79,804	617,548	1942.....	131,258	1,079,692
1938.....	63,009	553,307	1943.....	107,121	1,025,151
1939.....	71,485	628,151	1944.....	102,421	987,842
1940.....	94,260	829,589	1945.....	93,068	884,322
1941.....	115,608	931,554	1946.....	105,919	1,117,683

(*) All produced in the province of Saskatchewan, with the following exceptions:

Includes production in Alberta—1937—80 tons, value \$480
 1938—89 tons, value \$1,127
 1939—10 tons, value \$186
 1940—10 tons, value \$50
 1941— 8 tons, value \$32

Table 340.—Production in Canada of Manufactured Sodium Sulphate, 1937-1946

Year	Salt Cake		Glauber's Salt	
	Tons	\$	Tons	\$
1937.....	3,746	53,244	3,203	52,658
1938.....	2,955	42,049	2,464	39,935
1939.....	2,661	40,219	3,189	52,331
1940.....	4,100	61,567	4,425	82,969
1941.....	5,191	83,991	3,372	64,206
1942.....	4,945	68,377	914	18,761
1943.....	4,256	57,526	.....	.....
1944.....	3,758	46,077	.....	.....
1945.....	2,850	35,226	.....	.....
1946.....	2,584	33,333	.....	.....

Table 341.—Imports into Canada of Sodium Sulphate, 1937-1946

Year	Salt Cake		Glauber's Salt	
	Tons	\$	Tons	\$
1937.....	14,117	132,352	1,706	25,000
1938.....	5,786	61,122	2,266	20,288
1939.....	6,542	73,575	1,330	20,102
1940.....	8,295	94,674	543	12,450
1941.....	7,819	105,502	250	8,244
1942.....	7,070	85,479	75	4,664
1943.....	11,904	150,496	566	15,399
1944.....	20,460	195,105	777	21,960
1945.....	13,535	120,982	1,016	29,452
1946.....	20,881	244,617	1,258	33,136

Table 342.—Available Data on Consumption of Sodium Sulphate (Salt Cake) in Canada, 1941-1946

—	1941	1942	1943	1944	1945	1946
	Tons	Tons	Tons	Tons	Tons	Tons
Pulp and paper.....	61,679	70,078	67,292	70,954	67,654	81,161
Non-ferrous smelters.....	28,294	21,541	33,385	37,079	30,000	26,124
Heavy chemicals.....	10	58	120	934	125	67
Glass.....	556	643	892	770	621	2,660
Medicinals.....	11	14	38	29	30	42
Textiles.....	10	3	.....	.....	.....	.....
Tanneries.....	21	3	.....	.....	.....	.....
Soaps.....	.....	18	.....	.....	.....	.....
Miscellaneous.....	10	4	.....	.....	.....	.....
Total.....	90,591	92,362	101,727	109,766	98,430	110,054

Not available

STRONTIUM MINERALS

There was no commercial production of strontium minerals in Canada during recent years. In 1941, 27 tons of celestite valued at \$280 was shipped from old dumps located on lots 6 and 7, concession 10 of Bagot township, Renfrew county, Ontario.

The following, relating to strontium, is from a review prepared by the Bureau of Mines, Ottawa:

"Several occurrences of celestite (strontium sulphate) of possible economic interest are known in Canada, and in 1920-21 some ground material produced from a deposit in Bagot township, Ontario, was sold to the paint trade. The material from this deposit is coarsely-fibrous in character and is not very pure, containing about 18 per cent of barium sulphate. It is accordingly not favoured for chemical use, but is regarded as suitable for paints and general filler or loader use. The old pit was pumped out in 1941 and a few tons of ore were sealed down from a small drift. This, along with some stockpile material, was shipped to Montreal for grinding. The product was used in the paint trade as a substitute for barite, but is reported to have found little favour, and no further work was done. Celestite of similar character and analysis occurs at some of the old fluorspar mines of the Madoc area in Ontario, and part of it might be recoverable from the waste dumps.

"Celestite, analyzing 98 to 99 per cent strontium sulphate, occurs as a small vein of coarse platy crystals in Lansdowne township, Ontario and some of it was mined many years ago.

"World production of strontium minerals is estimated at 5,000 to 7,000 tons a year. England is the principal source of supply, with Germany next. The United States produced about 350 tons in 1940, exclusive of celestite used for oil-drilling. Important deposits are reported to occur in India and Newfoundland, but there has been no production from these sources as yet.

"Celestite is the principal source of strontium used in the manufacture of the various strontium salts, and strontianite a less common mineral, is used for the same purpose. The nitrate, carbonate, and hydrate are the most important of the strontium compounds used in industry and medicine. Strontium nitrate is employed mainly in pyrotechnics, for fireworks, railroad signal flares, and military flares and rockets to which it imparts the characteristic strong red flame colour of the element. Other strontium compounds are employed in tracer bullets and shells. The hydrate is used chiefly in the refining of beet sugar by the Scheibler process. In North America, however, sugar is refined mainly by the Steffens, or lime process. The carbonate is reported to be used to some extent as a batch ingredient in the manufacture of certain kinds of glass, glazes, and enamels, and as a fluxing and desulphurizing and dephosphorizing agent in iron and steel. Strontium chloride powder finds limited use in refrigerators working on the solid absorption principle. Ground celestite is used in fairly large quantities for purifying caustic soda in the rayon industry, and some impure material has been ground and employed as a barite substitute for weighting oil-drilling muds. Interest has also been shown in the possibilities of the carbonate and the sulphate in glass and white wares.

"Strontium metal, made from either the natural sulphate or carbonate, is used in limited quantities in certain alloys, mainly of copper, tin, lead, zinc, and cadmium."

VOLCANIC DUST

(Text from the Annual Review by the Bureau of Mines, Ottawa)

Volcanic dust (pumicite or pumice dust) is a natural glass or silicate, atomized by volcanic explosions and thrown into the air in great clouds which ultimately settle, forming beds of varying thickness, often hundred of miles from its source. In many instances the dust has been washed down from higher levels and redeposited by the agency of waters, in which case the beds are stratified and mixed with foreign substances. It consists of aluminum silicate (80 to 90 per cent), and of oxides and silicates of iron, sodium, magnesium, calcium, etc.

Deposits of volcanic dust occur in Saskatchewan, Alberta and British Columbia. There was no production in 1945 and 1946. In 1943 about 60 tons was shipped from Rock Glen, 125 miles southeast of Swift Current, Saskatchewan. A lease was taken out recently on the Duncairn deposit near Swift Current and samples of cleanser material were distributed.

The United States is the largest consumer of volcanic dust and pumice, and has an annual output of about 90,000 tons valued at over \$700,000. The material is used mainly in scouring and cleansing compounds and as a concrete admixture and concrete aggregate. To a minor extent it is used for insulation; in glass bevelling; for polishing aluminum; in the manufacture of fire-proof walls; in Acoustic plaster; in building tiles; as a filler in paint and in asphalt; and in glazes in ceramics.

SULPHUR (Including Pyrites)

(Text from the Annual Review by the Bureau of Mines, Ottawa)

Pyrites is produced in Canada as a by-product in the treatment of copper-pyrites ores at Waite-Amulet and Noranda mines in Quebec and at Britannia mine in British Columbia. No lump pyrites has been produced in Canada for several years, and published statistics on recent pyrites production refer to by-product iron pyrites recovered in the concentrating of copper and copper-zinc ores.

Deposits of native sulphur of commercial grade have not been found in Canada, but sulphur occurs in combination with copper, lead, zinc, nickel, or iron in many base metal sulphide orebodies in various parts of the country. In smelting these ores sulphur dioxide gas is produced, and to 1925 this gas was a total waste as no facilities were available for the recovery from it of sulphur or of sulphur compounds. In practice this gas can be used directly for the manufacture of liquid sulphur dioxide or for the production of elemental sulphur. Sulphur used in the making of sulphuric acid is recovered in the form of sulphur dioxide from salvaged gas by The Consolidated Mining and Smelting Company of Canada, Limited at Trail, British Columbia, and by Canadian Industries Limited at Copper Cliff, Ontario. There has been no production of elemental sulphur in Canada since July 1943.

In Quebec, Noranda Mines Limited, Noranda, recovers the pyrites from the cyanide mill tailings and sells it to pulp and paper mills at Trois-Rivières and at Hull, Quebec, and to chemical plants in Canada and the United States. Waite-Amulet Mines, Limited has been producing a pyrite concentrate since March 1944, which it ships mainly to the United States.

In British Columbia, most of the large output of pyrites from the Britannia mine of Britannia Mining and Smelting Company, Limited, at Britannia Beach, was sold to Nichols Chemical Company's acid plant at Barnet, British Columbia, and the remainder was exported to Compagnie des Boleo in Mexico. The pyrites averaged over 50 per cent in sulphur. A considerable tonnage from operations in previous years has accumulated for disposal when market conditions are more favourable. The property of Northern Pyrites, Limited at Eestall River, about 60 miles south of Prince Rupert, remained idle. Reserves are estimated at 5,000,000 tons with a sulphur content of 45 per cent.

By July 1943, the demand for sulphuric acid for fertilizer manufacture had become so great that the production of elemental sulphur at Trail, which was commenced in 1936 was discontinued. The sulphuric acid is made in a plant using the contact process, that was erected by Consolidated Mining and Smelting Company in 1929. Canadian Industries Limited also uses the contact process in its acid plant at Copper Cliff, the production of sulphuric acid being from converter gas that is withdrawn from the flues by arrangement with The International Nickel Company of Canada, Limited.

Table 343.—Production of Sulphur(*) in Canada, 1932-1946

Year	Tons	\$	Year	Tons	\$
1932.....	53,172	470,014	1940.....	170,630	1,298,018
1933.....	57,373	510,299	1941.....	260,023	1,702,786
1934.....	51,537	515,502	1942.....	303,714	1,994,891
1935.....	67,446	634,235	1943.....	257,515	1,753,425
1936.....	122,132	1,033,055	1944.....	248,088	1,755,739
1937.....	130,913	1,154,992	1945.....	250,114	1,881,321
1938.....	112,395	1,044,817	1946.....	234,771	1,784,666
1939.....	211,278	1,668,025			

(*) Includes sulphur recovered from smelter gas.

Table 344.—Production in Canada of Pyrites With Sulphur Content, Including Sulphur Contained in Sulphuric Acid, Etc., Made From Smelter Gases, 1944-1946

	Pyrites			Smelter Gas		Total Sulphur	
	Sales	Sulphur Content		Sulphur Content		Tons	Value
	Tons	Tons	Value	Tons	Value		
1944			\$		\$		\$
Quebec.....	240,370	116,887	453,501	.....	.....	116,887	453,501
Ontario.....				17,876	178,760	17,876	178,760
British Columbia.....	9,701	4,886	39,088	108,439	1,084,390	113,325	1,123,478
Canada.....	250,071	121,773	492,589	126,315	1,263,150	248,088	1,755,739
1945							
Quebec.....	218,628	105,613	445,534	.....	.....	105,613	445,534
Ontario.....				16,847	168,470	16,847	168,470
British Columbia.....	9,095	4,590	36,677	123,064	1,230,640	127,654	1,267,317
Canada.....	227,723	110,203	482,211	139,911	1,399,110	250,114	1,881,321
1946							
Quebec.....	194,291	92,716	375,328	.....	.....	92,716	375,328
Ontario.....				15,433	154,330	15,433	154,330
British Columbia.....	7,644	3,822	27,006	122,800	1,228,002	126,622	1,255,008
Canada.....	201,935	96,538	402,334	138,233	1,382,332	234,771	1,784,666

Table 345.—Available Data on the Consumption of Sulphur (Brimstone) in Canada, 1943-1946

Industry	1943	1944	1945	1946
	(Tons of 2,000 pounds)			
Pulp and paper.....	206,785	195,203	203,522	226,296
Heavy chemicals.....	69,236	68,649	53,689	45,346
Rubber goods.....	1,412	1,259	1,496	1,446
Explosives.....	1,806	1,753	1,131	1,461
Insecticides.....	1,246	1,228	1,244	1,297
Adhesives.....	93	495	75	64
Starch.....	270	240	253	208
Fruit and vegetable preparations.....	215	156	123	119
Sugar refining.....	104	108	130	128
Petroleum refining.....	47	51	51	68
Matches.....	76	75	89	83
Miscellaneous.....	3,828	670	600	195
Total Accounted For.....	285,118	269,887	262,403	276,711

Table 346.—Imports of Sulphur (Brimstone) into Canada, 1937-1946

Year	Tons	\$	Year	Tons	\$
1937.....	225,684	3,669,082	1942.....	290,121	4,680,672
1938.....	93,647	1,471,741	1943.....	218,527	3,524,006
1939.....	152,216	2,453,836	1944.....	235,955	3,875,649
1940.....	215,597	3,628,348	1945.....	248,846	4,063,324
1941.....	235,271	3,920,184	1946.....	273,502	4,271,081

CHAPTER NINE

CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS

Including Cement, Clay and Clay Products (Brick, Drain Tile, Kaolin, Sewer Pipe, Structural Tile, Stoneware and Pottery made from Domestic Clays, Fireclay, Firebrick, Fireclay Blocks and Shapes, Imported Clay Products), Lime, Sand and Gravel, Sand-Lime Brick, and Stone, including Slate.

Grouped in this Chapter are those industries producing structural materials from non-metallic minerals, rocks and clays of Canadian origin. These industries include those firms engaged in the production of Clay Products, Portland Cement, Lime, Sand, Gravel and Stone. The combined value of these materials produced in Canada during 1946 totalled \$66,120,221 compared with \$48,419,673 in 1945. Of the 1946 output, Ontario contributed \$24,293,081 and Quebec \$22,615,910 or 36.7 per cent and 34.2 per cent respectively. In order of importance, lesser amounts were also produced in British Columbia, Alberta, Manitoba, New Brunswick and Nova Scotia.

The quality of structural materials produced in Canada compares favourably with that of other countries. Most of the larger plants producing cement, clay products, lime, stone and sand and gravel are equipped with modern machinery and the Dominion is endowed with practically inexhaustible deposits of most primary materials required in any building or construction project of the future.

There has been an increasing consumption of stone and lime for other than building purposes. This has been particularly evident in recent years and is the result of expansion in certain industries where these materials are utilized in various chemical processes. Shipments of stone and lime for these purposes are classified, for convenience, with data relating to production of these same materials for structural purposes. However, statistics pertaining to their consumption for industrial purposes are segregated in the following tables.

Table 347.—Gross Value of Clay Products and Other Structural Materials Produced in Canada, by Provinces, 1942-1946

Province	1942	1943	1944	1945	1946
	\$	\$	\$	\$	\$
Nova Scotia.....	1,980,912	1,597,791	1,081,805	1,310,214	1,671,504
New Brunswick.....	1,305,343	911,121	1,644,047	1,497,688	1,833,508
Quebec.....	17,723,293	15,863,115	15,085,337	17,628,154	23,362,072
Ontario.....	16,557,804	15,414,525	16,088,455	17,872,222	24,917,679
Manitoba.....	2,317,933	2,402,647	2,648,430	3,350,115	4,405,157
Saskatchewan.....	707,123	932,412	864,082	834,564	1,322,107
Alberta.....	2,836,160	2,752,839	3,149,234	3,398,323	4,886,591
British Columbia.....	3,564,405	3,246,623	3,573,857	3,911,254	5,570,349
Canada—Gross value.....	46,992,973	43,121,073	44,135,247	49,802,534	67,968,967
Net value.....	35,334,369	32,464,633	32,916,190	37,885,652	51,848,199

Gross value includes cement containers.

Net value—Deductions made for fuel, electricity, process supplies and containers.

NOTE.—For statistics relating to employment, etc., in these combined industries, see Chapter 1.

THE CEMENT MANUFACTURING INDUSTRY

The total value of shipments of Portland cement from Canadian plants reached a new high in 1946, when 11,560,483 barrels worth \$20,122,503 were sold or used by the producers, an increase of 36 per cent in quantity and 48 per cent in value over the 1945 shipments of 8,471,679 barrels valued at \$14,246,480. Production (shipments) by provinces in 1946 was as follows: Quebec, 5,046,166 barrels; Ontario, 3,677,695 barrels; Manitoba, 1,254,946 barrels; Alberta, 809,721 barrels, and British Columbia, 771,955 barrels.

The same 8 plants were in operation during 1946 as in the previous year. The Canada Cement Company Limited had works at Hull and Montreal East in Quebec, at Port Colborne and Belleville in Ontario, at Fort Whyte in Manitoba, and at Exshaw in Alberta; the St. Mary's Cement Co. Limited operated a mill at St. Mary's, Ontario, and the British Columbia Cement Co. Limited had a plant at Bamberton, British Columbia. These plants have 18 kilns with a rated capacity of 33,550 barrels per day, and the capacity of the 16 kilns which were in operation in 1946 was 31,640 barrels per day.

Raw materials used in 1946 included 2,525,653 tons of limestone, 65,431 tons of gypsum, 227,645 tons of clay, 3,862 tons of pyrite cinder, 31,222 tons of silica sand, and 99,355 tons of shale.

There is also one plant in Canada, operated by Medusa Products Company of Canada Limited, at Paris, Ontario, which makes white Portland cement, cement paints, etc., but as this firm uses imported clinker its operations have not been included in this review which is concerned only with the establishments which operate on domestic raw materials.

An average of 1,532 employees in this industry in 1946 were paid \$2,929,020 in salaries and wages. Raw materials, process supplies and containers cost \$4,306,467, fuel and electricity cost \$4,487,496, and the gross value of shipments, f.o.b. works, including containers, was \$21,724,021.

Imports of Portland cement into Canada amounted to 350,057 barrels valued at \$1,098,532 in 1946, and imports of white Portland cement clinker totalled 14,296 barrels valued at \$30,147. Exports of Portland cement in the year under review amounted to 114,370 barrels at \$236,276. The apparent consumption in Canada in 1946 was 11,796,170 barrels.

Table 348.—Principal Statistics for the Cement Manufacturing Industry in Canada, 1937-1946

Year	Number of plants	Number of employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies, materials and containers (*)	Gross value of products sold during year, including containers (f.o.b. works)
			\$	\$	\$	\$
1937.....	9	1,083	1,373,444	1,904,418	540,915	9,095,867
1938.....	8	1,034	1,306,331	1,764,427	1,369,173	9,081,366
1939.....	8	1,001	1,297,542	1,705,981	1,372,238	9,351,391
1940.....	8	1,052	1,515,766	2,347,730	1,943,491	13,006,643
1941.....	8	1,235	1,860,931	2,897,383	2,146,825	14,323,372
1942.....	8	1,241	2,059,337	3,127,264	2,287,223	15,628,403
1943.....	8	1,209	2,154,213	3,089,380	2,467,709	12,709,852
1944.....	8	1,207	2,254,775	3,197,955	2,566,432	12,646,741
1945.....	8	1,317	2,398,117	3,210,929	2,794,676	15,422,031
1946.....	8	1,524	2,929,020	4,487,496	4,306,467	21,724,021

(*) Includes only process supplies for 1937; both process supplies and containers for 1938 to 1942 inclusive; and process supplies, containers and raw materials for later years.

Table 349.—Production, Imports and Exports of Portland Cement, 1945 and 1946

	1945		1946	
	Barrels(*)	Value	Barrels(*)	Value
		\$		\$
Output.....	7,819,412	.....	10,675,472	.....
Shipments (sold or used by producers).....	8,471,679	14,246,480	11,560,483	20,122,503
Stocks on hand December 31.....	1,354,532	.....	469,521	.....
IMPORTS—				
Portland cement and hydraulic or water lime.....	32,653	141,539	350,057	1,098,532
Portland cement clinker (white).....	16,728	35,023	14,296	30,147
Manufactures, n.o.p.....	.....	31,306	.....	51,633
EXPORTS—				
Portland cement.....	281,944	535,012	114,370	236,276
Apparent Consumption.....	(†) 8,222,388	.....	11,796,170	.....

(*) 1 barrel=350 pounds.

(†) Exclusive of clinker imported.

Table 350.—Producers' Shipments and Apparent Consumption of Cement in Canada, 1937-1947

Year	Shipments (Sold or Used)		Apparent Consumption in Canada(*)
	Barrels	\$	Barrels
1937.....	6,168,971	9,095,867	6,157,485
1938.....	5,519,102	8,241,350	5,478,180
1939.....	5,731,264	8,511,211	5,591,328
1940.....	7,559,648	11,775,345	7,272,886
1941.....	8,368,711	13,063,588	8,069,824
1942.....	9,126,041	14,365,237	8,878,481
1943.....	7,302,289	11,599,033	7,148,265
1944.....	7,190,851	11,621,372	6,994,406
1945.....	8,471,679	14,246,480	8,222,388
1946.....	11,560,483	20,122,503	11,796,170

(*) Shipments plus imports less exports.

Table 351.—Producers' Shipments of Cement in Canada, by Provinces, 1944-1946

Province	1944		1945		1946	
	Barrels	Value(*)	Barrels	Value(*)	Barrels	Value(*)
		\$		\$		\$
Quebec.....	3,249,302	4,736,004	3,872,373	5,985,077	5,046,166	7,910,548
Ontario.....	1,863,210	2,730,381	2,460,996	3,805,131	3,677,695	6,025,503
Manitoba.....	865,756	1,698,567	959,398	2,027,629	1,254,946	2,811,264
Alberta.....	699,989	1,370,502	620,337	1,246,346	809,721	1,635,222
British Columbia.....	512,594	1,085,918	558,575	1,182,297	771,955	1,739,966
Canada.....	7,190,851	11,621,372	8,471,679	14,246,480	11,560,483	20,122,503

(*) Does not include the value of containers.

Table 352.—Specified Materials Used in Canadian Cement Plants, 1937-1946

Year	Shale	Limestone	Gypsum	Silica sand	Clay	Iron oxides(*)
	Tons	Tons	Tons	Tons	Tons	Tons
1937.....	(x)	1,465,168	33,691	9,281	195,877	444
1938.....	13,821	1,344,868	51,975	9,465	143,421	22
1939.....	27,241	1,379,858	31,492	7,942	105,982	16
1940.....	18,347	1,765,944	38,903	15,298	144,152	170
1941.....	26,837	2,086,781	49,031	16,110	188,954	614
1942.....	30,498	2,155,750	49,816	20,711	188,202	2,094
1943.....	(a) 75,460	1,918,742	47,034	19,473	165,345	1,502
1944.....	74,303	1,865,597	42,672	23,942	173,728	3,924
1945 (b).....	70,600	1,849,258	45,883	29,424	161,980	3,197
1946 (b).....	99,355	2,525,653	65,431	31,222	227,645	3,892

(x) Data not recorded.

(*) Produced from iron pyrites by the chemical industry.

(a) Prior to 1943 shale consumed in British Columbia plants was included with limestone

(b) Value of these materials purchased in 1945 totalled \$349,195, and 1946 totalled \$505,994.

Table 353.—Coal Used in Portland Cement Plants in Canada, 1937-1946

Year	Canadian		Foreign	
	Tons	\$	Tons	\$
1937.....	145,791	760,766	90,925	513,417
1938.....	127,812	656,187	89,172	499,812
1939.....	190,538	1,010,071	16,141	82,336
1940.....	185,325	1,108,287	85,885	513,224
1941.....	125,740	772,829	203,905	1,331,448
1942.....	156,544	1,003,490	192,105	1,305,383
1943.....	98,135	595,385	225,741	1,664,546
1944.....	108,292	731,706	219,802	1,634,690
1945.....	121,299	823,988	206,995	1,566,420
1946.....	172,081	1,237,718	289,046	2,233,402

Table 354.—Number and Capacity of Kilns in Portland Cement Plants in Canada, 1937-1946

Year	Total Kilns		Kilns in Use During the Year	
	Number	Total capacity Barrels per 24 hours	Number	Total capacity Barrels per 24 hours
1937.....	18	33,900	(*)	(*)
1938.....	21	35,200	10	23,100
1939.....	21	35,000	11	23,700
1940.....	21	35,000	13	27,950
1941.....	20	33,050	16	30,350
1942.....	19	34,650	17	32,450
1943.....	19	33,750	15	30,296
1944.....	19	33,250	15	30,150
1945.....	19	33,250	15	30,150
1946.....	18	33,550	16	31,640

(*) Data not recorded.

Table 355.—Employees, Salaries and Wages in the Cement Manufacturing Industry in Canada, 1940-1946

Year	Number of Employees					Salaries	Wages	Total Salaries and Wages
	On Salaries		On Wages		Total			
	Male	Female	Male	Female				
						\$	\$	\$
1940.....	79	4	969		1,052	191,548	1,324,218	1,515,766
1941.....	79	8	1,148		1,235	190,771	1,670,160	1,860,931
1942.....	79	10	1,152		1,241	200,779	1,858,558	2,059,337
1943.....	75	16	1,091	27	1,209	215,137	1,939,081	2,154,218
1944.....	76	16	1,066	49	1,207	229,490	2,025,285	2,254,775
1945.....	87	15	1,159	56	1,317	248,365	2,149,752	2,398,117
	Administration		Workmen			Administrators' earnings	Workmens' earnings	Total
1946.....	101	12	1,400	19	1,532	276,567	2,682,028	2,958,595

Table 356.—Wage-Earners in the Cement Manufacturing Industry in Canada, by Months, 1945 and 1946

Month	1945			1946		
	Quarry	Mill		Quarry	Mill	
	Male	Male	Female	Male	Male	Female
January.....	129	942	39	239	1,157	44
February.....	120	928	30	159	1,132	25
March.....	122	930	31	160	1,144	23
April.....	126	928	39	178	1,170	16
May.....	149	936	72	171	1,272	11
June.....	151	993	73	164	1,271	13
July.....	156	1,027	79	179	1,253	15
August.....	152	1,033	72	181	1,271	16
September.....	153	1,047	64	175	1,274	17
October.....	146	1,123	61	183	1,249	17
November.....	147	1,161	54	164	1,258	17
December.....	165	1,126	45			
Average.....	144	1,015	56	176	1,224	19

THE CLAY AND CLAY PRODUCTS INDUSTRY

The industrial clays of Canada may be classified as common clays, stoneware clays, fire-clays and china clays. Statistically, the ceramic industry of Canada is conveniently classified into two divisions: (1) Production from domestic clays, which includes the production of building brick, structural tile, drain tile, roofing tile, stoneware, sewer pipe, pottery and refractories, and (2) production from imported clays, which includes the manufacture of electrical porcelains, sanitary ware, sewer pipe, table ware, pottery, ceramic floor and wall tile, and various kinds of fireclay refractories. Data relating to the production of glass, cement and artificial abrasives are contained in separate reports.

A total of 151 plants operated in the domestic and imported clay products industries in Canada during 1946. These two industries provided employment for 5,350 persons during the year; their earnings totalled \$7,986,505. The combined production in 1946 was valued at \$19,280,738 compared with \$14,240,374 in 1945.

I. Production from Domestic Clays

The gross value of Canadian producers' sales of domestic clays and products made from same totalled \$12,207,367 in 1946 compared with \$8,913,092 in 1945. Eight provinces reported the commercial production of domestic clay products. Ontario production was valued at \$4,288,780; Quebec, \$3,457,168; Alberta, \$1,808,971 and the remainder was contributed by the other five provinces.

There were 119 plants operated by 110 firms who employed 3,437 persons and distributed \$5,115,962 in salaries and wages. Fuel and electricity used in 1946 was valued at \$2,365,552 and the process supplies had a value of \$278,125.

Sales of building brick in 1946 amounted to \$6,627,517 for 272,389 M pieces. This is compared with 200,241 M pieces which sold for \$4,566,179 in 1945. The sewer pipe and drain tile sales were \$2,032,403; structural tile, \$1,504,345; pottery, \$1,195,478; bentonite, \$211,825 and firebrick, fireclay blocks and fireclay, \$458,886.

Table 357.—Principal Statistics for the Clay Products Industry in Canada, 1937-1946

Year	Establishments	Employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies	Gross value of products sold during year (f.o.b. works)
			\$	\$	\$	\$
1937.....	143	2,287	2,094,792	1,032,755	103,568	4,516,859
1938.....	152	2,242	2,110,233	939,190	114,659	4,536,084
1939.....	149	2,165	2,161,688	998,683	108,815	5,151,236
1940.....	143	2,557	2,675,251	1,282,593	139,635	6,344,547
1941.....	142	2,881	3,227,785	1,561,326	207,247	7,575,336
1942.....	124	2,523	3,073,011	1,292,373	158,866	7,081,723
1943.....	105	2,173	2,909,841	1,157,471	104,336	6,608,193
1944.....	110	2,247	3,176,804	1,357,313	161,189	6,997,425
1945.....	106	2,688	3,828,206	1,780,426	194,257	8,913,092
1946.....	119	3,437	5,115,962	2,365,552	278,125	12,207,367

Table 358.—Production (Total Sales) of Clay Products from Domestic Clays, 1937-1946

Year	\$	Year	\$
1937.....	4,516,859	1942.....	7,081,723
1938.....	4,536,084	1943.....	6,608,193
1939.....	5,151,236	1944.....	6,997,425
1940.....	6,344,547	1945.....	8,913,092
1941.....	7,575,336	1946.....	12,207,367

Table 359.—Production (Total Sales) of Clay Products, by Provinces, 1944-1946
(Gross Values)

Province	1944	1945	1946
	\$	\$	\$
Nova Scotia.....	402,694	433,455	671,466
New Brunswick.....	207,051	232,783	336,971
Quebec.....	1,881,791	2,534,630	3,457,168
Ontario.....	2,347,396	3,107,189	4,288,780
Manitoba.....	197,353	269,917	372,920
Saskatchewan.....	330,907	271,288	411,446
Alberta.....	1,143,577	1,401,875	1,808,971
British Columbia.....	480,625	661,955	859,645
Canada.....	6,997,425	8,913,092	12,207,367

Table 360.—Production (Sales) of Domestic Clay and Clay Products in Canada, 1945 and 1946

Product	Unit of measure	Sales or Shipments			
		1945		1946	
		Quantity	\$	Quantity	\$
Clay—Bentonite.....	ton	170,799	.....	211,825	.....
Fireclay.....	ton	4,266	31,416	4,696	30,607
Kaolin.....	ton	446	3,771	821	5,775
Other clay.....	ton	18,242	29,920	30,277	39,204
Fireclay blocks and shapes.....	.....	225,275	.....	222,430	.....
Firebrick.....	M	3,466	186,651	3,368	205,849
Brick—Soft mud process—Face.....	M	5,424	128,762	10,858	223,272
Common.....	M	21,516	378,884	17,013	347,937
Stiff mud process—Face.....	M	76,094	2,074,833	106,128	3,050,611
(wire cut) Common.....	M	51,413	940,266	65,406	1,262,178
Brick—Dry press—Face.....	M	25,680	636,721	41,573	1,093,612
Common.....	M	19,993	400,091	31,239	645,252
Fancy or ornamental brick (including special shapes, embossed and enamelled brick).....	M	81	5,806	1	82
Sewer brick.....	M	41	816	171	4,573
Paving brick.....	M	206	12,010	53	3,681
Structural tile—	.....	.....	.....	.....	.....
Hollow blocks (including fireproofing and load-bearing tile).....	ton	94,244	998,210	129,694	1,453,549
Roofing tile.....	M	.....	.....	1	97
Floor tile (quarries).....	.....	46,365	.....	50,699	.....
Drain tile.....	M	13,393	495,875	18,051	677,564
Sewer pipe (including copings, flue linings, conduits, etc.).....	.....	.....	1,178,141	.....	1,354,839
Pottery, glazed or unglazed (including coarse earthenware, sanitary ware, stoneware, flower pots, and all other pottery).....	.....	.....	930,567	.....	1,195,478
Other products.....	.....	.....	37,913	.....	128,253
Total.....	.....	.....	8,913,092	.....	12,207,367

In addition to the clays recorded in the above table, there were 227,645 tons of ordinary clay consumed in Canada during 1946 in the production of Portland cement; the corresponding consumption in 1945 was 161,980 tons. Also consumed by the Canadian cement industry in 1946 were 99,355 tons of shale.

Table 361.—Production (Sales) (a) of Building Brick in Canada, 1937-1946

Year	Quantity	\$	Average value per M (b)	Year	Quantity	\$	Average value per M (b)
	M		\$		M		\$
1937.....	153,770	2,375,276	15.45	1942.....	169,317	3,018,375	17.83
1938.....	148,807	2,341,443	15.73	1943.....	138,678	2,808,764	20.25
1939.....	165,024	2,676,634	16.22	1944.....	154,785	3,155,380	20.38
1940.....	191,213	3,277,187	17.14	1945.....	200,241	4,566,179	22.82
1941.....	208,871	3,765,493	18.00	1946.....	272,389	6,627,517	24.33

(a) Totals comparable with those in Table 362.

(b) Based on shipments of all grades and the value per M should be interpreted as the value of pressed, common and other varieties 'en masse' and not the value of any one particular type of brick.

Table 362.—Production (Sales) of Building Brick(*) in Canada, by Provinces, 1944-1946

Province	1944		1945		1946	
	M	\$	M	\$	M	\$
Nova Scotia.....	5,987	96,411	6,827	110,065	8,167	160,492
New Brunswick.....	6,407	109,983	7,895	166,104	9,560	223,688
Quebec.....	65,103	1,303,666	82,319	1,806,738	113,695	2,642,891
Ontario.....	50,654	1,323,651	74,446	1,944,365	104,078	2,800,236
Manitoba.....	1,596	37,115	4,212	100,366	6,384	165,348
Saskatchewan.....	556	9,230	753	15,820	4,148	92,186
Alberta.....	15,590	197,940	19,377	292,350	21,360	377,573
British Columbia.....	2,942	77,384	4,412	130,371	4,997	165,103
Canada.....	154,785	3,155,380	200,241	4,566,179	272,339	6,627,517
Average value per M.....		20.38		22.82		24.33

(*) Includes fancy and sewer brick.

Table 363.—Value(*) of Drain Tile and Sewer Pipe Produced (Sales) in Canada from Domestic Clays, by Provinces, 1944-1946

Province	1944	1945	1946
	\$	\$	\$
Nova Scotia.....	165,106	178,587	315,661
New Brunswick.....	5,269	3,495	2,638
Quebec.....	206,338	231,208	212,646
Ontario.....	621,326	692,873	848,961
Manitoba.....	3,400	4,050	7,500
Saskatchewan.....	253,679	357,920	381,133
Alberta.....	135,339	205,883	263,864
British Columbia.....			
Canada.....	1,390,457	1,674,016	2,032,403

(*) Includes value of copings, flue linings, etc.

Table 364.—Value(*) of Drain Tile and Sewer Pipe Produced in Canada, 1937-1946

Year	Value	Year	Value
	\$		\$
1937.....	1,089,180	1942.....	1,721,580
1938.....	1,100,881	1943.....	1,507,223
1939.....	1,167,181	1944.....	1,390,457
1940.....	1,430,154	1945.....	1,674,016
1941.....	1,755,753	1946.....	2,032,403

(*) Includes value of copings, flue linings, etc.

Table 365.—Production (Sales) of Fireclay Blocks and Shapes and Firebrick from Domestic Clays, by Provinces, 1946

Province	Fireclay		Fireclay blocks and shapes	Firebrick	
	Short tons	\$	\$	M	\$
Nova Scotia.....	2,823	10,819	1,101	14	653
New Brunswick.....					
Ontario.....	1,066	8,906	180,698		
Saskatchewan.....	807	10,882	40,631	3,353	205,196
British Columbia.....					
Canada.....	4,696	30,607	222,430	3,367	205,849

Table 366.—Production (Sales) of Fireclay, Fireclay Blocks and Shapes, and Firebrick from Domestic Clay, 1937-1946

Year	Fireclay		Fireclay blocks and shapes	Firebrick	
	Short tons	\$	\$	M	\$
1937.....	4,123	26,081	75,431	2,950	142,827
1938.....	2,344	17,243	73,512	2,213	113,581
1939.....	3,785	22,504	95,256	2,331	119,346
1940.....	4,881	30,564	85,127	3,167	165,525
1941.....	5,431	35,475	100,497	3,643	183,897
1942.....	5,601	40,722	210,246	3,816	197,830
1943.....	5,653	42,122	256,655	3,644	192,618
1944.....	7,630	38,433	221,251	3,180	164,837
1945.....	4,266	31,416	225,275	3,466	186,651
1946.....	4,696	30,607	222,430	3,367	205,849

NOTE.—Firebrick and fireclay blocks and shapes are made also from imported clays; see table 384.

Table 367.—Production (Sales) of Pottery from Domestic Clays, 1937-1946

Year	Value	Year	Value
	\$		\$
1937.....	232,209	1942.....	646,088
1938.....	235,890	1943.....	701,144
1939.....	282,712	1944.....	838,544
1940.....	474,452	1945.....	930,567
1941.....	502,212	1946.....	1,195,478

(*) Includes value of sanitaryware.

Table 368.—Production (Sales) of Pottery from Domestic Clays, by Provinces, 1944-1946

Province	1944	1945	1946
	\$	\$	\$
New Brunswick.....	75,288	46,792	68,929
Quebec.....	62,000	147,388	157,413
Ontario.....	60,000	69,182	77,800
Alberta.....	617,326	663,960	888,525
British Columbia.....	3,930	3,245	2,811
Canada.....	838,544	930,567	1,195,478

Table 369.—Production of Structural Tile in Canada, by Provinces, 1946

Province	Hollow Blocks (*)		Roofing Tile	Floor Tile (Quarries)	
	Short tons	\$	\$	Sq. ft.	\$
Nova Scotia.....	18,199	182,073			
New Brunswick.....	4,675	41,716			
Quebec.....	37,862	405,814			
Ontario.....	39,479	476,272	97	203,750	50,649
Manitoba.....	6,615	85,043			
Saskatchewan.....	16,059	157,487			
Alberta.....	6,805	105,144		2,200	50
British Columbia.....					
Canada.....	129,694	1,453,549	97	203,950	50,699

(*) Including fireproofing and load-bearing tile.

Table 370.—Production of Structural Tile in Canada, 1937-1946

Year	Hollow Blocks (*)		Roofing Tile		Floor Tile (Quarries)	
	Short tons	\$	Number	\$	Sq. ft.	\$
1937.....	64,526	533,843	60,542	3,302	73,191	12,169
1938.....	70,648	591,416	150,504	5,196	100,958	15,330
1939.....	86,120	714,291	148,291	4,964	90,812	15,233
1940.....	105,073	788,478	41,772	1,839	.....	13,681
1941.....	117,530	1,063,120	.....	750	.....	21,349
1942.....	109,905	1,082,573	.....	32	.....	23,705
1943.....	84,469	819,535	.....	827	.....	26,949
1944.....	87,820	811,558	.....	.....	212,805	43,817
1945.....	94,244	998,210	.....	.....	197,164	46,865
1946.....	129,694	1,453,549	.....	97	205,950	50,699

(*) Including fireproofing and load-bearing tile.

Table 371.—Production (Sales) of Bentonite and Kaolin in Canada, by Provinces 1937-1946

Year	Bentonite								Kaolin (a)	
	Manitoba		Alberta		British Columbia		Canada		Tons	\$
	Tons	\$	Tons	\$	Tons	\$	Tons	\$		
1937.....	132	1,154	.....	.....	31	817	163	1,971	.....	.....
1938.....	.....	.....	1,136	3,444	43	215	1,179	3,659	.....	.....
1939.....	99	591	889	2,850	.....	.....	988	3,441	.....	.....
1940.....	710	2,023	714	2,240	45	225	1,469	4,488	.....	.....
1941.....	760	1,330	1,817	5,882	95	618	2,172	7,830	2	30
1942.....	660	38,800	956	5,404	.....	.....	1,616	44,204	408	6,130
1943.....	.....	110,428	.....	5,262	.....	1,357	(b)	117,047	93	1,531
1944.....	.....	160,268	.....	2,076	.....	1,504	(b)	163,848	424	5,758
1945.....	.....	169,551	.....	1,248	.....	.....	(b)	170,799	446	3,771
1946.....	.....	207,572	.....	4,253	.....	.....	(b)	211,825	821	5,775

(a) All from Quebec.

(b) Quantity not available for publication.

Table 372.—Fuller's Earth Used in Canada in the Manufacture of Soaps and Washing Compounds and in the Petroleum Products Industry, 1937-1946

Year	Petroleum Products Industry		Soaps and Washing Compounds	
	Pounds (*)	\$	Pounds	\$
1937.....	18,843,458	240,309	1,167,768	20,393
1938.....	19,687,467	281,688	1,195,208	19,575
1939.....	19,814,473	304,214	1,586,163	30,924
1940.....	23,828,660	406,185	1,651,471	40,695
1941.....	30,155,750	571,010	1,486,000	39,332
1942.....	24,162,091	528,350	1,350,000	37,831
1943.....	25,390,653	601,283	2,410,000	83,233
1944.....	27,569,500	646,708	1,181,020	35,047
1945.....	28,604,000	685,761	750,000	24,351
1946.....	25,623,347	570,819	100,500	1,647

(*) Includes all clays.

Table 373.—Producers' Sales of Products Made from Canadian Clays, by Months, 1946 and 1947

Month	Building Brick		Structural Tile (a)		Drain Tile		Sewer Pipe	Fireclay blocks and shapes	Pottery (b)		Other Clay Products (c)	Total
	M	\$	Ton	\$	M	\$			\$	\$		
1946												
January.....	15,421	376,268	8,428	91,857	611	23,017	93,006	19,798	111,907	50,013	765,866	
February.....	13,079	318,875	7,117	76,761	476	19,459	85,859	14,324	111,184	44,739	671,201	
March.....	16,980	408,222	9,387	96,961	522	20,122	97,906	15,936	99,935	42,694	781,776	
April.....	17,829	430,449	10,280	111,298	612	22,313	115,683	13,489	97,996	47,741	838,969	
May.....	21,347	523,303	13,968	154,911	1,187	45,089	115,063	15,723	103,676	51,651	1,009,416	
June.....	23,341	580,208	12,470	138,725	1,503	55,988	112,984	14,741	74,867	44,003	1,024,516	
July.....	27,356	676,868	15,000	170,567	1,586	59,971	135,528	18,011	112,459	48,337	1,224,741	
August.....	28,171	691,083	13,161	150,931	1,664	62,600	111,141	24,209	86,541	54,387	1,480,902	
September.....	26,131	647,186	11,351	124,767	1,595	61,383	109,935	20,065	96,480	52,321	1,412,137	
October.....	28,579	701,468	12,156	140,042	1,929	75,085	121,284	22,117	116,263	54,876	1,234,135	
November.....	26,447	633,869	11,788	134,543	1,274	51,401	122,626	29,189	112,587	43,185	1,427,400	
December.....	19,040	469,544	9,079	108,366	1,240	47,369	93,109	14,023	81,176	53,914	867,501	
Total	263,721	6,457,353	134,155	1,499,729	14,199	543,797	1,314,124	221,625	1,205,071	587,861	11,829,560	
1947												
January.....	17,433	432,358	9,293	108,239	837	31,289	92,239	18,035	115,544	65,562	863,266	
February.....	16,876	445,666	8,458	112,508	760	31,056	113,239	8,779	114,333	49,874	875,455	
March.....	19,347	516,026	10,772	148,365	498	23,080	113,871	21,526	128,405	60,845	1,006,678	
April.....	19,944	514,226	12,471	164,744	479	24,861	117,462	23,202	95,462	59,840	1,009,507	
May.....	23,924	639,723	12,370	168,476	1,567	62,688	187,299	20,556	105,772	39,845	1,228,316	
June.....	24,039	659,723	13,259	189,676	1,335	56,338	142,654	18,940	78,587	50,369	1,297,086	
July.....	27,748	775,549	13,262	190,733	1,445	65,666	145,061	22,517	89,386	62,941	1,341,054	
August.....	25,098	695,912	13,186	171,134	1,742	61,882	164,548	31,250	70,621	67,408	1,252,172	
September.....	28,440	754,445	15,568	193,277	1,742	71,862	184,406	26,052	66,924	50,924	1,333,230	
October.....	29,148	804,802	15,042	210,092	2,408	100,770	148,406	28,052	53,852	70,088	1,414,062	
November.....	24,189	671,354	14,025	189,876	2,559	120,434	157,052	31,317	74,664	57,718	1,302,465	
December.....	23,563	658,098	11,914	163,402	1,341	60,122	119,863	16,371	82,395	50,139	1,150,390	
Total	278,156	7,566,449	152,902	2,010,522	16,513	710,354	1,646,880	278,268	1,075,945	685,563	13,973,951	

(a) Includes floor tile.

(b) Includes flower pots, stoneware, etc.

(c) Includes firebrick, fireclay, china clay, etc.

Table 374.—China Clay (Kaolin) Used in the Manufacture of Paper in Canada, 1937-1946

Year	Tons	Value	Year	Tons	Value
		\$			\$
1937.....	41,738	578,223	1942.....	28,734	578,190
1938.....	34,968	488,147	1943.....	26,374	561,285
1939.....	32,760	430,002	1944.....	47,995	987,488
1940.....	36,931	558,659	1945.....	45,571	954,659
1941.....	32,844	588,585	1946.....	36,379	788,472

Table 375.—Clays and Earths Used in Canadian Rubber Goods Industry, 1937-1946

Year	Tons	Value	Year	Tons	Value
		\$			\$
1937.....	3,614	79,300	1942.....	1,523	37,186
1938.....	2,942	81,935	1943.....	1,257	35,266
1939.....	3,438	80,745	1944.....	1,009	51,942
1940.....	3,586	90,867	1945.....	3,953	102,182
1941.....	4,059	101,441	1946.....	4,333	107,710

Table 376.—Firebrick, Fireclay and Cupola Blocks used in the Manufacture of Iron and Steel and their Products in Canada, 1937-1946

Year	Cost at Works	Year	Cost at Works
	\$		\$
1937.....	1,058,787	1942.....	3,268,181
1938.....	838,012	1943.....	3,717,826
1939.....	939,495	1944.....	3,195,751
1940.....	1,597,898	1945.....	3,088,142
1941.....	2,581,813	1946.....	2,280,172

Table 377.—Fuller's Earth and Infusorial Earth Used in Specified Canadian Industries, 1937-1946

Year	Sugar Refineries		Vegetable Oil Mills	
	Pounds (a)	\$	Pounds	\$
1937.....	4,586,786	95,532	(c) 212,997	9,349
1938.....	4,908,597	101,473	(b) 190,253	9,063
1939.....	4,819,811	105,711	(b) 207,105	10,166
1940.....	4,984,362	112,369	(b) 216,254	7,731
1941.....	5,333,131	133,129	(b) 275,290	10,604
1942.....	3,007,180	75,295	(b) 437,120	20,154
1943.....	3,451,142	89,075	(b) 484,380	20,302
1944.....	4,375,201	115,053	(b) 431,820	17,991
1945.....	3,983,325	102,961	207,950	6,794
1946.....	4,391,733	104,794	27,260	145

(a) Infusorial earth.

(b) Fuller's earth, in 1942, includes 97,785 pounds clarex earth valued at \$4,657; in 1943 it includes 164,130 pounds valued at \$7,836; in 1944 it includes 20,000 pounds valued at \$1,100, and in 1945 and 1946 nil.

(c) Includes other earth.

Table 378.—Employees, Salaries and Wages in the Clay Products Industry in Canada, 1940-1946

Year	Number of Employees					Salaries	Wages	Total salaries and wages
	On Salaries		On Wages		Total em- ployees			
	Male	Female	Male	Female				
						\$	\$	\$
1940.....	261	35	2,261		2,557	605,913	2,069,338	2,675,251
1941.....	241	41	2,599		2,881	602,549	2,625,236	3,227,785
1942.....	227	54	2,082	160	2,523	590,545	2,482,466	3,073,011
1943.....	190	58	1,718	207	2,173	570,300	2,339,541	2,909,841
1944.....	195	58	1,786	208	2,247	594,282	2,582,522	3,176,804
1945.....	225	66	2,188	209	2,688	652,758	3,175,448	3,828,206
	Administration		Workmen					
1946.....	138	41	2,987	271	3,437	385,133	4,730,829	5,115,962

Table 379.—Workmen in the Clay Products Industry in Canada, by Months, 1945 and 1946

Month	1945				1946			
	Pit	Plant		Total	Pit	Plant		Total
	Male	Male	Female		Male	Male	Female	
January.....	140	1,579	185	1,904	108	2,127	251	2,486
February.....	138	1,570	188	1,896	113	2,194	251	2,558
March.....	142	1,589	204	1,935	125	2,356	241	2,722
April.....	187	1,720	218	2,125	152	2,604	252	3,008
May.....	246	1,863	205	2,314	241	2,899	278	3,418
June.....	271	2,030	203	2,504	263	3,037	271	3,571
July.....	283	2,132	205	2,620	264	3,259	305	3,828
August.....	288	2,236	202	2,726	270	3,180	274	3,724
September.....	262	2,155	193	2,610	269	3,156	268	3,693
October.....	259	2,218	218	2,695	226	3,042	283	3,551
November.....	217	2,262	209	2,688	189	2,897	282	3,368
December.....	188	2,175	253	2,616	140	2,601	284	3,025
Average.....	225	1,963	209	2,397	207	2,780	271	3,258

II. Products from Imported Clays

This industry covers the operations of Canadian plants which were occupied chiefly in making ceramic products from imported clays. Products made in these plants during 1946 included high tension insulators, vitreous china sanitary ware, china dinnerware, firebrick, sewer pipe, floor and wall tile, refractory cements, electrical porcelains, etc.

Thirty-two plants reported in this group for 1946 and their output was valued at \$7,073,371 against last year's total of \$5,327,282 and the 1944 figure of \$4,424,565. The average number of workers was 1,913 and payments for salaries and wages totalled \$2,870,543. Fuel and electricity cost \$440,771 and materials for use in manufacturing processes cost \$1,674,391.

Table 380.—Principal Statistics of the Imported Products Industry, 1945 and 1946

	1945	1946
Number of plants.....	28	32
Average number of employees.....	1,427	1,913
Salaries and wages.....	\$ 2,064,645	\$ 2,870,543
Cost of fuel and electricity.....	\$ 345,127	\$ 440,771
Cost of materials at works.....	\$ 1,167,283	\$ 1,674,391
Gross selling value of products at works.....	\$ 5,327,282	\$ 7,073,371

NOTE.—Profits or losses cannot be calculated from above figures as data are not available for general expense items, such as interest, rent, depreciation, taxes, insurance, advertising, etc.

Table 381.—Imports into Canada and Exports of Clay and Clay Products, 1945 and 1946

	1945		1946	
	Quantity	\$	Quantity	\$
IMPORTS				
Building brick..... ton	3,815	51,814	3,112	57,448
Building blocks and fireproofing tile.....		55,728		94,175
Clays—China..... cwt.	1,273,203	712,546	1,223,234	750,089
Fire..... cwt.	1,457,888	286,916	1,375,781	289,803
Pipe..... cwt.	144,928	18,528	170,180	23,554
Other clays, n.o.p.....		165,387		222,890
Activated clay to refine oil.....		347,823		267,519
Zirconium silicate.....		19,467		26,299
Zirconium oxide.....		41,120		54,455
Drain tile, unglazed.....		1,513		1,148
Drain, sewer pipe and earthenware fittings therefor, chimney linings or vents, chimney tops or inverted blocks, glazed or unglazed, n.o.p.....		42,139		101,761
Tiles or blocks of earthenware or stone prepared for mosaic flooring.....		63,006		110,140
Tiles, earthenware, for roofing purposes.....		1,209		9,806
Tiles, earthenware, n.o.p.....		248,176		340,853
Insulators, electric, porcelain.....		281,611		397,225
Pottery, chinaware and earthenware, n.o.p.....		5,629,055		7,978,548
Brick, fire, other, valued at not less than \$100 per M, rectangular shaped, the dimensions of each not to exceed 125 cubic inches for use exclusively in the construction or repair of a furnace, kiln, etc.....		12,627		26,947
Brick, fire, n.o.p., for use exclusively in the construction or repair of a furnace, kiln or other equipment of a manufacturing establishment (not made in Canada).....		1,573,134		1,708,588
Firebrick, n.o.p.....		1,230,274		1,680,976
Firebrick, chrome.....		448,440		470,288
Magnesite brick (fire).....		305,141		433,327
Silica brick (containing not less than 90 per cent silica).....		741,394		579,075
Paving brick..... ton	2,617	25,686	3,998	36,832
Artificial teeth, not mounted.....		818,235		1,038,793
Baths, bathtubs, basins, laundry tubs, etc., of earthenware, cement or clay, n.o.p.....		254,050		741,070
Saggars.....		26,143		48,733
Crucibles, clay or sand.....		41,766		46,199
Other manufactures of clay, n.o.p.....		189,885		216,074
Grog for refractory materials..... ton	4,439	47,766		72,663
Total.....		13,680,579		17,825,283
EXPORTS				
Building brick..... M	3,708	75,963	6,114	150,110
Bricks, fire.....		165,940		308,075
Clay, manufactures of.....		25,292		42,823
Clays, unmanufactured..... cwt.	23,434	6,260		15,528
Earthenware.....		67,860		91,957
Porcelain insulators.....		285,933		443,097
Total.....		627,248		1,051,599

Table 382.—Materials Used in the Imported Clay Products Industry, 1945 and 1946

Material	1945		1946	
	Short tons	Total cost at works	Short tons	Total cost at works
		\$		\$
Imported clays—				
Ball clay.....	3,209	58,835	4,825	100,154
China clay.....	3,183	73,750	4,641	99,502
Fireclay.....	27,892	227,826	29,833	239,088
Sagger clay.....	648	11,157	769	15,856
Other imported clays.....	1,090	23,258	1,327	26,852
Canadian clays—				
China clay.....	12	540	16	660
Fireclay.....	35	735	43	1,312
Other Canadian clays.....	10	165	232	2,445
Firebrick, ground or broken (grog), including scrap brick.....	6,237	91,604		98,095
Feldspar.....	2,747	58,135	3,806	87,439
Silica sand and ground quartz.....	3,659	52,946	4,554	53,215
Sodium silicate.....	177	5,320	427	12,325
Talc.....	713	12,392	1,107	19,542
Other glazing materials.....		21,611		36,085
Insulator hardware.....		215,620		461,850
Shipping containers and packing materials.....		165,470		245,164
All other materials and process supplies.....		147,819		174,807
Total.....		1,167,283		1,674,391

Table 383.—Products Made in the Imported Clay Products Industry, 1945 and 1946

Product	1945	1946
	Gross selling value at works	Gross selling value at works
	\$	\$
Firebrick and stove linings—Rigid.....	452,110	488,562
Plastic.....	277,019	381,455
High temperature cements.....	125,425	126,306
Electrical porcelains (high tension insulators and other electrical porcelains).....	1,474,245	2,504,503
Pottery—Artware.....	2,219,929	475,700
Pottery, other (sanitary ware, tableware, etc.).....		2,071,349
All other products (*).....	778,554	1,025,496
Total.....	5,327,282	7,073,371

(*) Includes sewer pipe, floor tile, wall tile, flue lining, etc.

Table 384.—Total Production in Canada of Refractory Shapes, 1937-1946

Year	From Domestic Clays			Silica Brick		Other (*)	Total
	Fireclay blocks and shapes	Firebrick				Rigid fire-brick and stove linings	
		M	\$	M	\$		
	\$					\$	\$
1937.....	75,431	2,950	142,827	3,744	181,126	441,341	840,725
1938.....	73,512	2,213	113,581	1,788	100,403	448,494	735,990
1939.....	95,256	2,331	119,346	2,493	124,807	640,376	979,785
1940.....	85,127	3,167	165,525	3,438	182,786	892,072	1,325,510
1941.....	190,497	3,643	183,897	4,111	238,433	1,198,096	1,810,923
1942.....	210,246	3,816	197,830	4,273	263,006	1,302,444	1,981,615
1943.....	262,154	3,644	192,618	4,165	295,505	1,461,484	2,211,761
1944.....	221,251	3,180	164,837	3,764	296,292	1,706,706	2,389,086
1945.....	225,275	3,466	186,651	4,208	317,263	1,484,301	2,213,490
1946.....	222,430	3,367	205,849	2,902	197,804	1,603,185	2,229,268

(*) Includes shapes made from imported clays, from magnesite, etc., amounting to 54,800 tons in 1942, to 31,341 tons in 1943, to 29,400 tons in 1944, to 26,532 tons in 1945 and to 28,534 tons in 1946.

THE LIME INDUSTRY

Production of lime in Canada amounted to 840,799 tons valued at \$7,074,940 in 1946 compared with 832,253 tons worth \$6,525,038 in 1945, an increase of only 1 per cent in tonnage but 8.4 per cent in value. This year's output, which was the first annual production to exceed 7 million dollars in valuation, included 684,674 tons of quicklime and 156,125 tons of hydrated lime valued respectively at \$5,778,243 and \$1,296,697. About 92 per cent of the quicklime and 49 per cent of the hydrated lime were used by chemical and other industrial plants and 8 per cent and 51 per cent respectively, were used by the building trade and for agriculture.

Stone used in the production of lime in Canada includes calcium, high calcium and dolomitic varieties of limestone. It is estimated that 1,487,000 tons of limestone were consumed in the production of lime in 1946. In addition, a considerable tonnage of lime was recovered as a by-product from chemical and allied plants.

In 1946 there were 41 active plants in this industry and the average number of employees for the year was 918. Expenditures by the operators included \$1,616,839 for salaries and wages, \$1,955,428 for fuel and electricity, and \$456,613 for containers and process supplies.

The imports of lime during 1946 totalled 7,618 tons valued at \$50,093 and the exports amounted to 24,673 tons worth \$279,620.

Table 385.—Principal Statistics for the Lime Industry in Canada, 1936-1946

Year	Establishments	Employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies and containers	Gross value of products sold during year, including containers (f.o.b. works)
	No.	No.	\$	\$	\$	\$
1936.....	57	799	640,322	743,663	96,316	3,335,970
1937.....	57	872	781,274	871,131	167,827	3,824,917
1938.....	53	867	795,068	826,230	113,759	3,542,652
1939.....	59	937	849,468	944,502	107,510	4,003,514
1940.....	55	962	1,003,671	1,424,047	260,321	(*) 5,277,377
1941.....	50	1,105	1,321,571	2,008,142	188,387	6,357,941
1942.....	48	1,022	1,312,320	2,421,292	177,268	6,530,839
1943.....	45	898	1,408,393	1,747,012	177,470	6,832,992
1944.....	42	815	1,414,426	1,752,723	293,827	(*) 7,051,785
1945.....	44	856	1,473,829	1,644,077	424,412	(*) 6,732,348
1946.....	41	918	1,616,839	1,955,428	456,613	(*) 7,322,168

(*) 1940, 1944, 1945 and 1946 are the only years in which the value of containers is available.

Table 386.—Production of Lime in Canada, 1931-1946

Year	Sold or Used (*)		Year	Sold	Used by producer	Total Value
	Short tons	Value		Short tons	Short tons	
		\$				\$
1931.....	344,785	2,764,415	1939.....	288,252	263,957	4,003,514
1932.....	320,650	2,394,537	1940.....	359,180	357,550	5,194,555
1933.....	323,540	2,432,306	1941.....	451,361	409,524	6,357,941
1934.....	368,113	2,745,797	1942.....	470,882	413,948	6,530,839
1935.....	405,419	2,925,791	1943.....	484,177	423,591	6,832,992
1936.....	468,401	3,335,970	1944.....	470,035	415,107	6,926,844
1937.....	549,353	3,824,917	1945.....	416,030	416,223	6,525,038
1938.....	486,922	3,542,652	1946.....	477,565	363,234	7,074,940

(*) Separate data for Sold and Used not available until 1939.

Table 387.—Production of Lime in Canada, by Provinces, Showing Purposes for which Used(*) or Sold, 1946

		Nova Scotia and New Brunswick	Quebec	Ontario	Manitoba and Alberta	British Columbia	Total Canada
(1 ton = 2,000 pounds)							
QUICKLIME							
BUILDING TRADES—							
Finishing lime.....	ton			7,413	7,918		15,331
	\$			65,533	74,170		139,703
Masons' lime.....	ton	1,139	17,283	9,028	1,619	2,470	31,539
	\$	16,764	229,667	99,454	21,751	28,145	395,781
AGRICULTURE.....	ton			70		459	529
	\$			755		4,678	5,433
INDUSTRIAL—							
Non-ferrous smelters.....	ton		2,172	1,016	2,138		5,326
	\$		17,376	7,115	17,104		41,595
Iron and steel furnaces†.....	ton		3,278	23,493	1,335	3,147	32,355
	\$		16,220	170,896	12,146	35,888	263,110
Cyanide and flotation mills.....	ton		546	6,631	6,024	510	13,711
	\$		4,444	51,224	56,456	6,402	118,526
Pulp and paper mills.....	ton		14,357	18,696	14,815	32,146	184,945
	\$		175,354	854,921	118,673	375,119	1,654,766
Glass works.....	ton			7,448			7,448
	\$			63,135			63,135
Sugar refineries.....	ton		171	6,054	11,033		17,383
	\$		2,516	1,322	55,291	91,475	150,604
Tanneries.....	ton		7	1,383	2,827		4,217
	\$		101	12,805	18,208		31,114
Sand-lime brick.....	ton		2,490	4,508	1,183		8,181
	\$		17,206	32,483	11,827		61,516
Insecticide plants.....	ton			1,002			1,002
	\$			7,015			7,015
Other industrial works.....	ton		27	274,052	3,000	745	355,189
	\$		394	2,003,509	25,000	9,351	2,746,804
OTHER CONSUMERS.....	ton		1,766	660	75	5,017	7,518
	\$		31,594	6,833	600	60,114	99,141
Total Quicklime.....	ton	18,569	209,573	362,898	49,140	44,494	684,674
	\$	242,943	1,874,251	2,712,150	429,202	519,697	5,778,243
HYDRATED LIME							
BUILDING TRADES—							
Finishing lime.....	ton		1,392	30,411	8,024		39,827
	\$		13,659	405,882	137,550		557,091
Masons' lime.....	ton		1,009	8,121			32,103
	\$		13,105	157,380	85,528		256,013
AGRICULTURE.....	ton		324	933		2,508	3,765
	\$		3,425	10,128		26,729	40,282
INDUSTRIAL—							
Non-ferrous smelters.....	ton		49,452	495	50		49,997
	\$		149,210	5,197	500		154,907
Iron and steel furnaces.....	ton		8	133			141
	\$		112	1,401			1,513
Cyanide and flotation mills.....	ton		1,375	249	105	50	1,779
	\$		10,858	2,513	1,050	1,035	15,456
Pulp and paper mills.....	ton		1,725	6,958	1,655	50	10,388
	\$		22,407	65,791	17,197	1,035	106,430
Glass works.....	ton			150			150
	\$			1,575			1,575
Sugar refineries.....	ton		31		3,598		3,629
	\$		402		25,901		26,303
Tanneries.....	ton		275	1,820			2,095
	\$		2,543	19,093			21,636
Sand-lime brick.....	ton			240			240
	\$			2,520			2,520
Insecticide plants.....	ton		352	26			378
	\$		4,571	246			4,817
Other industrial works.....	ton		229	4,031	3,415	228	3,101
	\$		2,973	26,802	36,498	3,027	71,478
OTHER CONSUMERS.....	ton		132	1,625		1,775	3,532
	\$		795	16,303		19,578	36,676
Total Hydrated Lime.....	ton	3,346	83,920	49,273	12,005	4,581	156,125
	\$	43,458	430,575	604,081	168,028	50,555	1,296,697
Grand Total.....	ton	21,915	296,493	412,171	61,145	49,075	840,799
	\$	286,401	2,304,826	3,316,231	597,230	570,252	7,074,940

(†) Includes calcined dolomite used as a refractory material.

(*) Not necessarily consumed in provinces where produced; includes by-product lime.

NOTE.—Of the total quantity of 840,799 tons of lime produced, 363,234 tons were consumed by the producers themselves.

Table 388.—Lime Sold or Used for Chemical and Other Purposes in Canada, 1931-1946

Year	Lime sold or used for chemical and industrial purposes				Lime sold or used for building or other non-industrial purposes			
	Quicklime		Hydrated Lime		Quicklime		Hydrated Lime	
	Short tons	\$	Short tons	\$	Short tons	\$	Short tons	\$
1931.....	213,782	1,469,434	18,055	167,885	65,726	595,550	47,222	531,546
1932.....	234,342	1,627,720	21,130	131,178	33,926	287,795	31,252	347,844
1933.....	207,463	1,496,271	28,347	168,675	60,464	459,451	27,266	307,909
1934.....	201,609	1,440,221	28,297	158,685	106,513	798,035	31,694	348,856
1935.....	229,597	1,596,518	31,288	179,139	112,450	828,904	32,084	321,230
1936.....	349,940	2,499,074	39,384	171,192	41,559	290,898	37,518	374,806
1937.....	421,867	2,022,482	44,929	189,665	44,671	329,901	37,886	382,869
1938.....	373,278	2,587,329	30,547	159,598	42,433	365,762	40,614	429,963
1939.....	424,287	2,887,244	30,861	172,062	50,466	439,403	46,595	504,805
1940.....	568,479	3,044,748	44,421	256,570	55,324	477,010	48,506	516,227
1941.....	665,319	4,797,078	86,202	496,531	58,545	490,633	50,819	573,699
1942.....	712,307	5,314,653	89,252	386,809	36,975	331,396	46,296	497,981
1943.....	730,499	5,642,420	94,224	381,250	35,648	347,668	47,397	461,654
1944.....	700,708	5,545,695	89,576	413,573	37,494	402,384	57,364	565,192
1945.....	671,341	5,159,761	60,926	323,484	36,832	420,107	63,154	621,686
1946.....	629,757	5,138,185	76,898	406,635	54,917	640,058	79,227	890,062

Table 389.—Imports into Canada and Exports of Lime, 1945 and 1946

	1945		1946	
	Quantity	Value	Quantity	Value
	Tons	\$	Tons	\$
IMPORTS				
Lime—United States.....	6,354	35,766	7,618	50,093
Total.....	6,354	35,766	7,618	50,093
EXPORTS				
Building Lime—Greenland.....	3	69		
Newfoundland.....	21	338	114	2,588
United States.....	135	1,687	132	2,107
Total.....	159	2,094	246	4,695
Lime N.O.P.—British Guiana.....			1	27
Jamaica.....	10	220	5	125
Newfoundland.....	106	1,580	356	4,933
Greenland.....	3	45		
St. Pierre.....	1	40	6	203
Nicaragua.....			60	750
United States.....	20,722	233,477	24,245	273,582
Total.....	20,842	235,362	24,673	279,620

Table 390.—Employees and Earnings in the Lime Industry in Canada, 1940-1946

Year	Number of Employees					Salaries	Wages	Total salaries and wages
	On Salaries		On Wages		Total employees			
	Male	Female	Male	Female				
						\$	\$	\$
1940.....	67	10	885		962	127,943	875,728	1,003,671
1941.....	76	16	1,013		1,105	150,695	1,170,876	1,321,571
1942.....	80	18	924		1,022	161,777	1,150,543	1,312,320
1943.....	78	21	797	2	898	158,629	1,249,764	1,408,393
1944.....	80	22	713		815	178,802	1,235,624	1,414,426
1945.....	81	19	748	8	856	194,191	1,279,638	1,473,829
	Administration		Workmen			Adminis- tration earnings	Workmen's earnings	
1946.....	49	11	850	8	918	132,431	1,484,408	1,616,839

NOTE.—Administration employees include executives, managers, superintendents, other working officials, and professional and clerical employees.

Table 391.—Workmen in the Lime Industry in Canada, by Months, 1945 and 1946

Month	1945					1946				
	Quarry		Kiln		Total	Quarry		Kiln		Total
	Male	Female	Male	Female		Male	Female	Male	Female	
January.....	213	1	484	9	707	229	.....	544	7	789
February.....	217	1	508	8	734	236	.....	551	8	795
March.....	225	1	528	9	763	243	.....	572	8	823
April.....	220	1	521	8	750	245	.....	593	8	846
May.....	211	1	519	7	738	255	.....	620	7	882
June.....	206	1	499	7	713	246	.....	614	8	868
July.....	212	1	513	7	732	256	.....	606	8	870
August.....	224	1	499	5	729	256	.....	603	8	867
September.....	220	1	514	7	742	256	.....	599	8	863
October.....	232	1	590	7	830	264	.....	651	8	923
November.....	264	1	584	8	857	255	.....	642	8	905
December.....	230	1	537	5	773	250	.....	625	8	883
Average.....	222	1	526	7	756	248	.....	602	8	858

THE SAND-LIME BRICK INDUSTRY

Five plants in Canada were engaged chiefly in making sand-lime building brick during 1946. Three of these were located in Ontario, 1 in Quebec and 1 in Manitoba. Production, including some building blocks and insulating brick, was valued at \$651,781 compared with the 1945 total of \$308,652.

An average of 134 people were employed in these works in 1946, and they were paid \$236,566 in salaries and wages. Expenditures for fuel and electricity amounted to \$47,651 and for processing materials to \$211,920.

Production of sand-lime brick amounted to 39,096 M valued at \$572,008, a gain in both quantity and value from the output of 15,514 M brick at \$260,136 in the previous year. Production of sand-lime building blocks increased to 353 M at \$58,333 from 280 M at \$44,514 in 1945.

Table 392.—Materials Used in Manufacturing, 1945 and 1946

Materials	Unit of measure	1945		1946	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Portland cement.....	bbl.	.....	.....	1,173	2,604
Quicklime.....	ton	3,870	38,375	8,609	87,060
Sand and gravel.....	cu. yd.	28,292	44,578	83,802	113,088
Other materials.....	.....	.....	1,686	.....	9,168
Total.....	.....	.....	84,639	.....	211,920

Table 393.—Products Made, 1945 and 1946

Product	1945		1946	
	Quantity	Selling value at works	Quantity	Selling value at works
	M	\$	M	\$
Sand-lime brick.....	15,514	260,136	39,096	572,008
Sand-lime building blocks.....	280	44,514	353	58,333
Other products (*).....	.....	4,002	.....	21,440
Total.....	.....	308,652	.....	651,781

(*) Includes cement blocks, cinder blocks and insulating brick.

THE SAND AND GRAVEL INDUSTRY

During 1946 the commercial production of sand and gravel in Canada totalled 39,949,994 tons valued at \$15,529,700, compared with the previous year's production of 29,750,703 tons valued at \$10,568,363. There was an increase of 34.3 per cent in tonnage, and 46.9 per cent in value. The totals included sand and gravel used by railroads as ballast, gravel used by mines as backfill and recoveries of sand by dredges as well as similar materials from other sources.

The leading producers among the provinces continued to be Ontario and Quebec, the former with a tonnage of 14,881,918 and the latter with 12,374,125 tons. Canadian sand and gravel plants washed or screened 6,152,580 tons in 1946 compared with 4,584,018 tons in 1945, and the quantity of bank or pit-run grades amounted to 33,797,414 tons compared with 25,166,685 tons of the preceding year.

Of the total sand and gravel (mixed) output in 1946, there were 26,640,116 tons used for concrete, roads, etc., and 3,421,830 straight-run sand for building, concrete, etc; 32,375 tons for moulding; 2,357 tons as core sand, and 59,444 tons for other purposes. The quantity of crushed gravel produced during the year under review was 3,096,611 tons. Other sand used as mine backfill in 1946 totalled 2,023,129 tons.

Imports of sand and gravel amounted to 70,664 tons valued at \$71,101 in 1946 and exports totalled 352,819 tons worth \$234,182.

The following extract with regard to sand and gravel in Canada has been taken from the annual review by the Bureau of Mines, Ottawa:

"Deposits of gravel and sand are numerous throughout Eastern Canada; with the exception of Prince Edward Island, where gravels are scarce. Owing to the widespread occurrence of gravels and sands and to their bulk in relation to value, local needs for these materials are usually supplied from the nearest deposits as their cost to the consumer is governed largely by the length of haul; hence the large number of small pits and the small number of large plants. Some grades of sand particularly suitable for certain industries command a much higher price than does ordinary sand.

"By far the greater part of the output of gravel and sand is used in road improvement, concrete works, and railway ballast. Gravel in particular has proved a good material in the building of all weather roads at low cost and its use has steadily increased with the growth of motor traffic. A considerable tonnage of sand and gravel is used in the mines for refilling underground workings. Some mines use several thousand tons a day.

"Most of the gravel used for road work comes from pits worked for that purpose. Usually a portable or semi-portable plant is used to extract enough gravel to supply the immediate need, and then, a sufficient reserve is built up, in the form of stockpiles, for two years' requirements. Gravel in road pits may remain unused for two years or more, and the amount of gravel produced from year to year thus fluctuates, depending upon the program of road construction and improvement. Gravel in railway pits may remain unused for several years. Part of the gravel used is crushed, screened, and in some cases even washed, and the proportion thus processed is increasing steadily. Some provincial highway departments have used crushed instead of pit-run gravel on their main highways for a number of years. Most of the large commercial plants are equipped for producing crushed gravel, a product that can compete with crushed stone.

"Most of the sand is used in the building industry for concrete work, cement and lime mortar, or wall plaster. It must be free from dust, loam, organic matter, or clay, and contain little silt, and is usually obtainable from local deposits. Other important uses of sand are moulding in foundries, filtering of water supply, and glass making, all of which require special grades of sand.

Table 394.—Principal Statistics(*) for the Sand and Gravel Industry in Canada, 1945 and 1946

Province	Establishments	Employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies and containers	Gross value of products sold during year (f.o.b. works)
	Number	Number	\$	\$	\$	\$
1945						
Nova Scotia.....	4	296	304,914	14,322	5,954	399,771
New Brunswick.....	4	242	208,575	2,033	2,113	425,926
Quebec.....	851	836	794,773	40,597	8,730	2,061,657
Ontario.....	604	328	492,733	216,127	17,657	4,111,329
Manitoba.....	9	115	263,230	8,253	28,565	470,091
Saskatchewan.....	6	53	61,705	428	3,921	501,193
Alberta.....	4	30	67,585	11,208	5,220	379,244
British Columbia.....	21	174	256,442	47,124	4,138	996,328
Total.....	1,503	2,074	2,449,957	340,092	76,298	9,345,539
1946						
Nova Scotia.....	4	291	248,549	1,950	168	450,293
New Brunswick.....	5	255	256,924	983	420	680,380
Quebec.....	893	1,102	1,118,710	92,989	11,169	3,189,541
Ontario.....	620	539	871,116	295,218	23,289	6,342,488
Manitoba.....	11	230	441,663	19,599	22,003	375,489
Saskatchewan.....	7	135	80,904	501	11,212	865,249
Alberta.....	6	36	52,717	20,723	3,595	1,006,354
British Columbia.....	22	205	343,293	69,504	6,161	1,742,139
Total.....	1,568	2,793	3,413,876	501,467	78,022	14,651,933

(*) Does not include data on sand and gravel produced by railroads. In 1945, railroad production by 21 operators was 5,177,342 tons valued at \$1,222,824. Salaries and wages paid to workers at these pits was \$309,249 for the year. In 1946, railroad production by 21 operators was 4,255,306 tons valued at \$877,767 and salaries and wages totalled \$186,921.

Table 395.—Production(*) of Sand and Gravel in Canada, 1935-1946

Year	Tons	\$	Year	Tons	\$
1935.....	21,213,489	6,389,440	1941.....	31,604,806	10,375,723
1936.....	22,124,160	6,921,399	1942.....	26,349,907	9,005,414
1937.....	27,001,301	10,492,696	1943.....	25,744,469	9,005,857
1938.....	32,223,882	12,002,554	1944.....	28,399,986	10,280,119
1939.....	31,294,341	11,241,102	1945.....	29,750,703	10,568,363
1940.....	31,375,415	11,759,245	1946.....	39,949,994	15,529,700

(*) Does not include production of natural silica sand or of silica sand manufactured from quartz or silica rock; production of these are recorded under quartz. Also, does not include sand used for back filling at mines prior to 1936.

Table 396.—Production in Canada of Sand and Gravel, 1945 and 1946

		Washed or screened	Bank or pit run	Total Value
		Tons	Tons	\$
1945				
PRODUCTION (*)—				
Sand—				
Moulding sand.....	20,501	11,110	57,842	
Building sand and sand for concrete, roadwork, etc.....	1,722,803	525,084	918,739	
Core sand.....	1,374		2,121	
Mine filling.....	5,530	1,969,355	376,935	
Other sand (including blast sands, engine sands, etc.).....	145,446	44,690	66,347	
Sand and Gravel—				
Sand and gravel for railway ballast.....	689,297	3,936,216	1,116,297	
Sand and gravel for concrete, road-building, etc.....	1,643,085	15,939,601	6,573,527	
Crushed gravel.....	355,982	2,740,629	1,456,555	
Total.....	4,584,018	25,166,685	10,568,363	
1946				
PRODUCTION (*)—				
Sand—				
Moulding sand.....	24,411	7,964	61,419	
Building sand and sand for concrete, roadwork, etc.....	2,558,531	863,299	1,681,572	
Core sand.....	918	1,439	4,091	
Mine filling.....	52,956	1,971,073	426,063	
Other sand (including blast sands, engine sands, etc.).....	8,807	50,637	15,026	
Sand and Gravel—				
Sand and gravel for railway ballast.....	207,229	3,760,894	867,616	
Sand and gravel for concrete, road-building, etc.....	2,383,513	24,256,603	10,530,718	
Crushed gravel.....	916,215	2,885,505	1,943,195	
Total.....	6,152,580	33,797,414	15,529,700	

(*) Does not include production of natural silica sand or of silica sand manufactured from quartz or silica rock; production of these are recorded under quartz in the bulletin "The Feldspar and Quartz Mining Industry".

Table 397.—Production of Sand and Gravel, by Provinces, 1942-1946

Province	1942	1943	1944	1945	1946
Prince Edward Island.....	(*) (*)	(*) (*)	(*) (*)	(*) (*)	(*) (*)
Nova Scotia..... Tons	775,795	917,376	911,970	1,308,848	1,105,980
\$	371,970	585,007	411,041	555,809	484,585
New Brunswick..... Tons	923,020	719,531	1,960,382	1,627,371	2,203,646
\$	540,541	372,936	958,524	686,267	807,045
Quebec..... Tons	11,026,249	10,601,376	8,541,400	8,971,960	12,374,125
\$	2,486,853	2,362,635	2,140,856	2,279,537	3,313,103
Ontario..... Tons	8,420,358	8,285,309	9,529,803	10,466,891	14,881,918
\$	3,433,986	3,620,852	4,417,427	4,466,862	6,738,595
Manitoba..... Tons	1,443,001	1,048,673	1,102,448	1,497,062	1,333,890
\$	427,150	293,938	296,086	516,380	416,431
Saskatchewan..... Tons	679,979	1,288,263	1,163,097	1,237,595	1,732,731
\$	435,798	583,687	533,175	563,276	910,661
Alberta..... Tons	481,644	626,157	833,524	919,736	1,812,468
\$	218,914	309,389	328,151	433,436	1,060,703
British Columbia..... Tons	2,599,861	2,257,784	4,357,362	3,721,240	4,505,236
\$	1,091,202	877,413	1,194,859	1,066,796	1,798,577

(*) No commercial production reported.

Table 398.—Production of Washed and Screened and Pit Run Grades, by Provinces, 1946

Province	Washed or screened	Bank or pit run	Total Value
	Tons	Tons	\$
Nova Scotia.....	13,500	1,092,480	484,585
New Brunswick.....	21,984	2,181,662	807,045
Quebec.....	968,320	11,405,805	3,313,103
Ontario.....	3,247,047	11,634,871	6,738,595
Manitoba.....	249,488	1,084,402	416,431
Saskatchewan.....		1,732,731	910,661
Alberta.....	243,204	1,569,264	1,060,703
British Columbia.....	1,409,037	3,096,199	1,798,577
Total.....	6,152,580	33,797,414	15,529,700

Table 399.—Production of Sand for Building and for Concrete, Roads, Etc., and Sand and Gravel for Railway Ballast and for Concrete, Roads, Etc., 1937-1946

Year	Sand		Sand and Gravel			
	For building, concrete, roads, etc. (*)		For railway ballast		For concrete, roads, etc.	
	Tons	\$	Tons	\$	Tons	\$
1937.....	1,356,269	476,824	2,764,639	533,876	19,453,188	8,340,764
1938.....	1,750,187	685,976	2,359,703	443,936	22,513,256	9,101,582
1939.....	1,169,899	364,829	3,223,718	603,288	22,899,751	8,988,114
1940.....	1,961,004	537,937	3,834,904	699,518	21,465,961	9,100,612
1941.....	2,192,405	729,901	4,836,908	916,979	19,769,798	7,135,258
1942.....	2,535,366	934,777	4,610,323	957,781	16,139,859	6,010,412
1943.....	1,970,316	775,392	3,837,111	712,140	16,060,686	6,155,625
1944.....	1,605,514	743,191	4,428,721	900,610	16,648,511	6,895,582
1945.....	2,247,887	918,739	4,625,513	1,116,297	17,582,686	6,573,527
1946—						
Nova Scotia.....			144,260	21,372	878,486	439,243
New Brunswick.....	188,278	30,514	108,545	21,352	1,714,906	638,206
Quebec.....	1,341,025	607,294	421,814	88,509	8,294,378	1,686,382
Ontario.....	1,649,586	924,734	2,217,948	531,038	9,399,512	4,443,831
Manitoba.....	42,632	18,947	274,485	53,476	939,435	299,176
Saskatchewan.....	765	158	273,004	46,831	1,458,607	863,578
Alberta.....	46,954	36,298	288,575	52,170	1,335,601	875,083
British Columbia.....	152,590	63,627	239,492	52,868	2,619,191	1,285,219
Canada, 1946.....	3,421,830	1,681,572	3,968,123	867,616	26,640,116	10,530,718

(*) Exclusive of engine and other sands and mine fill.

Table 400.—Production of Moulding and Core Sand and Crushed Gravel, by Provinces, 1946

Province	Moulding Sand		Core Sand		Crushed Gravel	
	Tons	\$	Tons	\$	Tons	\$
Nova Scotia.....	893	3,550			82,341	20,420
New Brunswick.....					191,917	110,973
Quebec.....					2,289,285	923,173
Ontario.....	31,114	57,476	2,357	4,091	782,682	588,090
Manitoba.....	348	348			73,757	42,927
Saskatchewan.....	20	45				
Alberta.....					135,114	95,143
British Columbia.....					246,624	156,469
Canada, 1946.....	32,375	61,419	2,357	4,091	3,801,720	1,943,195
Canada, 1945.....	31,611	57,842	1,374	2,121	3,096,611	1,456,555

Table 401.—Workmen(*) in the Sand and Gravel Industry in Canada, by Months, 1945 and 1946

Month	1945			1946		
	Male	Female	Total	Male	Female	Total
January.....	440		440	648	4	652
February.....	422		422	660	4	664
March.....	466		466	771	4	775
April.....	606	1	607	871	8	879
May.....	2,432	1	2,433	3,226	10	3,236
June.....	5,799	1	5,800	7,520	13	7,533
July.....	5,826	1	5,827	7,698	14	7,712
August.....	2,552	1	2,553	3,814	14	3,828
September.....	2,524	2	2,526	3,419	14	3,433
October.....	851	2	853	1,286	14	1,300
November.....	791	2	793	1,093	11	1,104
December.....	617	1	618	830	6	836
Average.....	1,976	2	1,978	2,658	12	2,670

(*) This report does not include employment data relating to the production of sand and gravel by railroads owing to the difficulty of separating statistics pertaining to part-time work conducted by railroad maintenance employees and work done by contractors. In 1946 the combined amount paid by railroads to contractors and wages paid railroad employees for the production of sand and gravel totalled \$186,921.

Table 402.—Sand, Gravel, and Crushed Stone Prices, 1945 and 1946

	Montreal		Toronto		Winnipeg		Vancouver	
	per ton		per ton		per cu. yd.		per cu. yd.	
	1945	1946	1945	1946	1945	1946	1945	1946
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Sand.....	1 20	1 28	1 00	1 02	1 00	1 00	1 00	1 01
Gravel.....	1 10	1 10	1 58	1 55	1 00	1 00	1 00	1 01
Crushed stone.....	0 97	0 97	1 70	1 67			1 10	1 13

THE STONE INDUSTRY IN CANADA

The Stone Industry in Canada comprises two main divisions: (1) THE STONE QUARRYING INDUSTRY, including quarries and dressing works operated in conjunction with quarries; (2) THE STONE PRODUCTS INDUSTRY, comprising the operations of firms having no quarries but who operate dressing works where stone for building and monumental purposes is cut, polished or otherwise finished. In the Census of Industry, statistics on the stone quarrying industry are included under Mining, while statistics of the stone products industry are included under Manufactures. For convenience, this chapter carries data for both of these industries.

Production by these industries during the year totalled \$20,849,606, which figure includes the value of the quarry output and the value added by manufacturing in the secondary stone industry. Salaried employees and wage-earners employed in 1946 numbered 4,261, and their combined earnings amounted to \$6,613,702.

The two industries are treated separately in the following review.

I. Primary Production—The Stone Quarrying Industry

The kinds of stone quarried in Canada include granite (trap rock, syenite and other igneous rock), limestone, marble, sandstone, and slate. Rocks of the igneous areas of British Columbia, Manitoba, Ontario, Quebec and the Maritime Provinces exhibit a wide range of physical characteristics, some varieties being especially noted for their richness of colour and beauty of crystallization. Sedimentary rocks, including limestones, sandstones and marbles are worked at various locations and the quarries operating in these different formations not only yield high class structural and decorative products but also provide materials for the chemical and allied industries.

The gross value of all varieties of new stone produced in Canada during 1946 amounted to \$11,185,711 compared with \$8,166,700 in 1945. The tonnage shipped in 1946 included 319,354 tons of granite (igneous rock) valued at \$2,006,297; 7,217,600 tons of limestone worth \$8,178,513; 21,796 tons of marble valued at \$201,817; 495,777 tons of sandstone valued at \$778,213; and 1,733 tons of slate valued at \$20,871. Of the total value of production, the quarries of Quebec contributed 50.3 per cent; Ontario accounted for 35.1 per cent; Nova Scotia for 4.6 per cent; British Columbia for 3.9 per cent; New Brunswick for 3.5 per cent; Manitoba for 2.1 per cent and Alberta for 0.5 per cent.

Table 403.—Principal Statistics of the Stone Quarrying Industry in Canada, 1944-1946

	1944	1945	1946
Number of firms.....	405	361	411
Number of employees—On salary.....	255	242	176
On wages.....	1,909	1,912	2,544
Total	2,164	2,154	2,720
Salaries and wages—Salaries..... \$	441,257	412,711	316,722
Wages..... \$	2,713,432	2,701,936	3,053,682
Total \$	3,154,689	3,114,647	3,970,404
Selling value of products (Gross)..... \$	7,159,177	8,166,700	11,185,711
Cost of fuel and electricity..... \$	671,056	711,111	834,824
Process supplies used..... \$	826,824	740,604	856,774
Selling value of products (Net)..... \$	5,661,297	6,714,985	9,494,113

Table 404.—Principal Statistics of the Stone Quarrying Industry, by Provinces, 1945 and 1946

Province	Number of quarries	Average number of employees	Salaries and wages	Cost of fuel and electricity	Process supplies	Gross value of production
			\$	\$	\$	\$
1945						
Nova Scotia.....	36	100	77,076	12,450	9,229	315,179
New Brunswick.....	9	68	75,003	7,106	1,926	328,509
Quebec.....	140	1,274	1,738,960	406,695	440,339	4,056,272
Ontario.....	169	604	1,050,331	269,411	272,711	2,926,694
Manitoba.....	7	24	32,194	5,992	6,082	85,798
Saskatchewan.....						
Alberta.....	3					54,962
British Columbia.....	65	84	141,083	9,457	10,317	399,286
Canada.....	429	2,154	3,114,647	711,111	740,604	8,166,700
1946						
Nova Scotia.....	28	104	126,209	30,571	31,783	515,453
New Brunswick.....	8	104	132,394	30,781	9,409	386,984
Quebec.....	142	1,648	2,306,845	473,611	483,599	5,630,265
Ontario.....	213	685	1,126,996	271,872	316,368	3,923,972
Manitoba.....	9	86	119,015	14,564	2,652	242,470
Saskatchewan.....						
Alberta.....	3					55,286
British Columbia.....	83	93	158,945	13,425	12,963	431,281
Canada.....	486	2,720	3,970,404	834,824	856,774	11,185,711

Table 405.—Production (Sales) of Stone from Canadian Quarries, by Kinds and by Provinces, 1945 and 1946

Province	Granite (a)	Limestone (b)	Marble	Sandstone	Slate	Total
1945						
Nova Scotia.....Tons	379	60,387		62,668		123,434
.....\$	25,695	158,044		130,540		315,179
New Brunswick.....Tons	4,669	84,639		10,020		99,328
.....\$	41,983	198,326		88,200		328,509
Quebec.....Tons	77,145	2,372,758	7,410	211,902	946	2,670,161
.....\$	887,113	2,877,684	65,556	224,352	1,567	4,056,272
Ontario.....Tons	109,286	2,833,573	5,818	3,689		2,952,357
.....\$	279,105	2,582,663	45,081	19,845		2,926,694
Manitoba.....Tons	425	62,201				62,626
.....\$	6,130	79,668				85,798
Alberta.....Tons		13,528				13,528
.....\$		54,962				54,962
British Columbia.....Tons	29,726	250,106	160	3,160	969	284,121
.....\$	44,722	332,432	2,700	3,160	16,272	399,286
Canada.....Tons	221,630	5,677,192	13,388	291,430	1,915	6,205,555
.....\$	1,284,748	6,284,379	113,337	466,397	17,839	8,166,700
1946						
Nova Scotia.....Tons	8,394	84,805		90,534		183,733
.....\$	49,176	215,257		251,020		515,453
New Brunswick.....Tons	358	115,565		5,200		121,123
.....\$	27,683	283,301		76,000		386,984
Quebec.....Tons	109,443	2,982,747	13,134	380,318	617	3,486,259
.....\$	1,408,618	3,683,271	138,564	398,858	954	5,630,265
Ontario.....Tons	122,562	3,747,948	8,402	11,365		3,890,277
.....\$	406,403	3,415,261	58,333	43,975		3,923,972
Manitoba.....Tons	256	64,876				65,132
.....\$	3,766	238,704				242,470
Alberta.....Tons		13,417				13,417
.....\$		55,286				55,286
British Columbia.....Tons	78,341	208,242	260	8,360	1,116	296,319
.....\$	110,651	287,433	4,920	8,360	19,917	431,281
Canada.....Tons	319,354	7,217,600	21,796	495,777	1,733	8,056,260
.....\$	2,006,297	8,178,513	201,817	778,213	20,871	11,185,711

(a) All igneous rocks included.

(b) Includes dolomite, also marl for agricultural purposes.

NOTE.—Not included in the above limestone statistics are 2,525,653 tons of limestone consumed in the cement industry in 1946 and 1,849,258 tons in 1945. Also, the limestone used in the lime industry is not included; it is estimated that approximately 1,487,140 tons of limestone were burned in the manufacture of lime in 1946 and 1,482,077 tons in 1945.

Table 406.—Production (Sales) of Stone(*) from Canadian Quarries, by Provinces, Showing Purposes for which Used, 1945 and 1946

For use as follows:	Nova Scotia	New Brunswick	Quebec	Ontario	Mani- toba	Alberta	British Colum- bia	Canada
1945								
Building stone—Rough.....Tons	600	67	6,568	29,194	271		2,319	39,019
Dressed.....Tons	6,848	101	33,278	44,808	2,309		6,324	93,668
Monumental and ornamental stone—Rough.....Tons	50	336	8,213	91			1,600	10,290
Dressed.....Tons	800	3,063	121,096	2,957			16,000	143,916
Flagstone.....Tons	329	190	5,223		150		47	5,939
Curbstone.....Tons	24,895	27,766	575,912		5,700		8,214	642,487
Paving blocks.....Tons		20	540	1,710	65			2,335
Lining open-hearth furnaces.....Tons		200	2,700	7,662	395			10,957
Chemical—								
Flux in iron and steel furnaces.....Tons			168	385,662	3,966	800	10	390,606
Flux in non-ferrous smelters.....Tons			168	341,165	6,603	2,000	200	350,136
Glass factories.....Tons			3,110	99,861			45,221	148,192
Pulp and paper mills.....Tons			2,872	74,869			61,178	138,919
Sugar refineries.....Tons			1,192	5,673		4,346		5,538
Other chemical uses.....Tons			11	6,981		17,380		23,053
Pulverized Stone—								
Whiting (substitute).....Tons			3,662	4,309			232	8,203
Asphalt filler.....Tons			36,617	26,165			2,702	65,484
Dusting coal mines.....Tons			6,023	4,310			517	10,851
Agricultural purposes and fertilizer plants.....Tons			21,581	14,973			2,585	39,168
Other uses.....Tons							313	3,305
Crushed stone for manufacture of artificial stone.....Tons							11,970	14,082
Roofing granules.....Tons							1,480	419,579
Poultry grit.....Tons							5,920	891,802
Stucco dash.....Tons							30	28,905
Terrazzo chips.....Tons							270	89,810
Rock wool.....Tons								1,062
Rubble and riprap.....Tons								4,839
Crushed stone—								
Concrete aggregate.....Tons								44,350
Road metal.....Tons								16,272
Railroad ballast.....Tons								1,617
Total Canada.....Tons								3,129
Per cent of total.....Quantity								29,585
Value								3,784
1946								
Building stone—Rough.....Tons	581	303	21,382	12,852	171		1,433	36,722
Dressed.....Tons	6,465	455	98,637	90,359	1,369		6,956	204,241
Monumental and ornamental stone—Rough.....Tons	30	1,236	23,118	7,108	2,714			34,206
Dressed.....Tons	2,101	73,430	875,399	88,730	167,397			1,207,057
Flagstone.....Tons	105	59	11,448	53			2,501	14,166
Curbstone.....Tons	1,857	1,180	206,003	800			28,150	237,990
Paving blocks.....Tons	289	163	7,431		150		34	8,067
Lining open-hearth furnaces.....Tons	31,319	23,073	823,135		7,720		5,809	891,056
Chemical—								
Flux in iron and steel furnaces.....Tons								
Flux in non-ferrous smelters.....Tons								
Glass factories.....Tons								
Pulp and paper mills.....Tons								
Sugar refineries.....Tons								
Other chemical uses.....Tons								
Pulverized Stone—								
Whiting (substitute).....Tons								
Asphalt filler.....Tons								
Dusting coal mines.....Tons								
Agricultural purposes and fertilizer plants.....Tons								
Other uses.....Tons								
Crushed stone for manufacture of artificial stone.....Tons								
Roofing granules.....Tons								
Poultry grit.....Tons								
Stucco dash.....Tons								
Terrazzo chips.....Tons								
Rock wool.....Tons								
Rubble and riprap.....Tons								
Crushed stone—								
Concrete aggregate.....Tons								
Road metal.....Tons								
Railroad ballast.....Tons								
Total Canada.....Tons								
Per cent of total.....Quantity								
Value								

(*) Includes the production of slate and marl.

Table 406.—Production (Sales) of Stone(*) from Canadian Quarries, by Provinces, Showing Purposes for which Used, 1945 and 1946—Concluded

For use as follows:	Nova Scotia	New Brunswick	Quebec	Ontario	Mani- toba	Alberta	British Colum- bia	Canada
1946—Concluded								
Chemical—Concluded								
Flagstone.....	Tons	100	1,186	7,221	80			8,587
	\$	1,000	14,754	8,495	470			24,719
Curbstone.....	Tons		881					881
	\$		8,850					8,850
Paving blocks.....	Tons		621	200				821
	\$		5,894	1,000				6,894
Lining open-hearth furnaces.....	Tons	24,459						24,459
	\$	46,472						46,472
Chemical—								
Flux in iron and steel furnaces.....	Tons	6	1,716	297,044	4,833		10	303,609
	\$	9	1,737	257,645	7,715		120	267,226
Flux in non-ferrous smelters.....	Tons		2,959	62,051	51	25	46,694	111,780
	\$		2,854	57,470	91	50	42,383	102,848
Glass factories.....	Tons		80			3,887		3,967
	\$		420			15,550		15,970
Pulp and paper mills.....	Tons	3,782	4,829	127,042	61,619	2,414	47,702	247,388
	\$	14,139	10,000	222,368	127,948	2,757	100,862	478,074
Sugar refineries.....	Tons		12	1,500	7,626			9,138
	\$		60	2,025	6,483			8,568
Other chemical uses.....	Tons			171,407			23,859	195,266
	\$			179,300			12,079	191,379
Pulverized Stone—								
Whiting (substitute).....	Tons		6,760	4,095			266	11,121
	\$		67,600	22,099			3,392	93,091
Asphalt filler.....	Tons	67	3,775	8,905			558	13,305
	\$	1,947	13,669	30,769			3,348	49,733
Dusting coal mines.....	Tons					4,700	350	5,050
	\$					18,850	2,363	21,163
Agricultural purposes and fertilizer plants.....	Tons	55,481	107,135	262,505	48,125	2,098	980	480,639
	\$	149,810	266,301	506,215	104,226	3,698	3,920	1,044,651
Other uses.....	Tons	980	21,985	21,536	2,574		80	47,155
	\$	2,450	84,638	68,332	2,248		720	158,388
Crushed stone for manufacture of artificial stone.....	Tons		336	1,600				1,936
	\$		1,811	5,803				7,614
Roofing granules.....	Tons		50	67,139			1,116	68,305
	\$		75	292,222			19,917	312,214
Poultry grit.....	Tons	36	867	7,963		3,530	2,537	14,933
	\$	439	3,697	41,234		16,720	12,700	74,790
Stucco dash.....	Tons		2,720	1,372			2,100	6,192
	\$		18,800	7,414			23,364	49,578
Terrazzo chips.....	Tons		3,275	4,000				7,275
	\$		23,965	30,000				53,965
Rock wool.....	Tons			1,576				1,576
	\$			2,207				2,207
Rubble and riprap.....	Tons	517	4,057	149,498	91,003	1,120	80,070	326,265
	\$	1,335	5,030	139,341	61,445	3,600	75,391	286,142
Crushed stone—								
Concrete aggregate.....	Tons		1,731,756	715,456	25,911	295	225	2,473,643
	\$		1,518,969	611,937	22,456	246	431	2,154,069
Road metal.....	Tons	97,406	3,223	556,853	1,712,600	21,842	80,109	2,472,033
	\$	257,119	6,446	498,761	1,350,749	21,667	80,425	2,315,167
Railroad ballast.....	Tons		546,515	577,725	1,174		2,360	1,127,775
	\$		490,648	477,505	1,282		2,360	971,595
Total Canada.....	Tons	183,733	121,123	3,486,259	3,890,277	65,132	296,319	8,056,260
	\$	515,453	386,984	5,630,265	3,923,972	242,470	431,281	11,185,711
Per cent of total.....	Quantity	2.28	1.50	43.27	48.29	0.81	3.68	100.00
	Value	4.61	3.46	50.33	35.08	2.17	0.49	100.00

(*) Include in production of slate and marl.

Table 407.—Production (Sales) of Stone from Canadian Quarries, by Kinds, Showing Purposes for which Used, 1945 and 1946

For use as follows:	Granite (a)	Limestone (b)	Marble	Sandstone	Slate	Total
1945						
Building stone—Rough.....	Tons	3,117	33,431	135	2,336	39,019
	\$	14,198	57,930	8,809	12,731	93,668
Dressed.....	Tons	1,267	15,056	119	1,250	17,692
	\$	97,098	464,411	18,224	78,000	657,733

For footnotes, see end of table, p. 329.

Table 407.—Production (Sales) of Stone from Canadian Quarries, by Kinds, Showing Purposes for which Used, 1945 and 1946—Continued

For use as follows:	Granite (a)	Limestone (b)	Marble	Sandstone	Slate	Total
1945—Concluded						
Monumental and ornamental stone—						
Rough.....Tons	10,199		91			10,290
Dressed.....Tons	140,959		2,957			143,916
Flagstone.....Tons	5,789	150				5,939
Curbstone.....Tons	636,787	5,700				642,487
Paving blocks.....Tons		1,071		1,264		2,335
Lining open-hearth furnaces.....Tons		3,845		7,112		10,957
Chemical—						
Flux in iron and steel furnaces.....Tons	90					90
Flux in non-ferrous smelters.....Tons	668					668
Glass factories.....Tons	411			300		711
Pulp and paper mills.....Tons	3,126			3,600		6,726
Sugar refineries.....Tons		14,760				14,760
Other chemical uses.....Tons		28,042				28,042
Pulverized stone—						
Whiting (substitute).....Tons		390,596	10			390,606
Asphalt filler.....Tons		349,936	200			350,136
Dusting coal mines.....Tons		148,192				148,192
Agricultural purposes and fertilizer plants.....Tons		138,919				138,919
Other uses.....Tons		4,496	1,042			5,538
Crushed stone for manufacture of artificial stone.....Tons		17,943	5,110			23,053
Roofing granules.....Tons		212,051				212,051
Poultry grit.....Tons		413,055				413,055
Stucco dash.....Tons		8,225				8,225
Terrazzo chips.....Tons		7,045				7,045
Rock wool.....Tons		286,902				286,902
Rubble and riprap.....Tons		282,961				282,961
Crushed stone—						
Concrete aggregate.....Tons		8,153	50			8,203
Road metal.....Tons		64,984	500			65,484
Railroad ballast.....Tons		10,851				10,851
Building stone—						
Rough.....Tons		39,168				39,168
Dressed.....Tons		3,305				3,305
Flagstone.....Tons		14,082				14,082
Curbstone.....Tons		419,579				419,579
Paving blocks.....Tons		891,802				891,802
Lining open-hearth furnaces.....Tons		28,305				28,305
Crushed stone—						
Concrete aggregate.....Tons		87,410	2,400			89,810
Road metal.....Tons		668	394			1,062
Railroad ballast.....Tons		2,489	2,330			4,819
Building stone—						
Rough.....Tons	43,261	100			969	44,330
Dressed.....Tons	125,016	150			16,272	141,438
Flagstone.....Tons	4,485	9,000	4,083			13,568
Curbstone.....Tons	4,445	43,862	22,599			70,906
Paving blocks.....Tons	240	1,430	1,450			3,129
Lining open-hearth furnaces.....Tons	2,526	15,559	11,500			29,585
Crushed stone—						
Concrete aggregate.....Tons		520	4,264			4,784
Road metal.....Tons		1,560	37,270			38,830
Railroad ballast.....Tons		1,423				1,423
Building stone—						
Rough.....Tons		1,886				1,886
Dressed.....Tons		40,231	1,150	12,892		54,173
Flagstone.....Tons		182,907	1,438	19,576	1,567	206,487
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons		1,849,865		19,724		1,869,589
Road metal.....Tons		1,502,390		31,889		1,534,279
Railroad ballast.....Tons		1,392,566		82,604		1,475,170
Building stone—						
Rough.....Tons		1,143,079		158,548		1,301,627
Dressed.....Tons		649,927		171,060		820,987
Flagstone.....Tons		523,264		154,941		678,205
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons						
Road metal.....Tons						
Railroad ballast.....Tons						
Building stone—						
Rough.....Tons						
Dressed.....Tons						
Flagstone.....Tons						
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons						
Road metal.....Tons						
Railroad ballast.....Tons						
Building stone—						
Rough.....Tons						
Dressed.....Tons						
Flagstone.....Tons						
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons						
Road metal.....Tons						
Railroad ballast.....Tons						
Building stone—						
Rough.....Tons						
Dressed.....Tons						
Flagstone.....Tons						
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons						
Road metal.....Tons						
Railroad ballast.....Tons						
Building stone—						
Rough.....Tons						
Dressed.....Tons						
Flagstone.....Tons						
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons						
Road metal.....Tons						
Railroad ballast.....Tons						
Building stone—						
Rough.....Tons						
Dressed.....Tons						
Flagstone.....Tons						
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons						
Road metal.....Tons						
Railroad ballast.....Tons						
Building stone—						
Rough.....Tons						
Dressed.....Tons						
Flagstone.....Tons						
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons						
Road metal.....Tons						
Railroad ballast.....Tons						
Building stone—						
Rough.....Tons						
Dressed.....Tons						
Flagstone.....Tons						
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons						
Road metal.....Tons						
Railroad ballast.....Tons						
Building stone—						
Rough.....Tons						
Dressed.....Tons						
Flagstone.....Tons						
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons						
Road metal.....Tons						
Railroad ballast.....Tons						
Building stone—						
Rough.....Tons						
Dressed.....Tons						
Flagstone.....Tons						
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons						
Road metal.....Tons						
Railroad ballast.....Tons						
Building stone—						
Rough.....Tons						
Dressed.....Tons						
Flagstone.....Tons						
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons						
Road metal.....Tons						
Railroad ballast.....Tons						
Building stone—						
Rough.....Tons						
Dressed.....Tons						
Flagstone.....Tons						
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons						
Road metal.....Tons						
Railroad ballast.....Tons						
Building stone—						
Rough.....Tons						
Dressed.....Tons						
Flagstone.....Tons						
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons						
Road metal.....Tons						
Railroad ballast.....Tons						
Building stone—						
Rough.....Tons						
Dressed.....Tons						
Flagstone.....Tons						
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons						
Road metal.....Tons						
Railroad ballast.....Tons						
Building stone—						
Rough.....Tons						
Dressed.....Tons						
Flagstone.....Tons						
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons						
Road metal.....Tons						
Railroad ballast.....Tons						
Building stone—						
Rough.....Tons						
Dressed.....Tons						
Flagstone.....Tons						
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons						
Road metal.....Tons						
Railroad ballast.....Tons						
Building stone—						
Rough.....Tons						
Dressed.....Tons						
Flagstone.....Tons						
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons						
Road metal.....Tons						
Railroad ballast.....Tons						
Building stone—						
Rough.....Tons						
Dressed.....Tons						
Flagstone.....Tons						
Curbstone.....Tons						
Paving blocks.....Tons						
Lining open-hearth furnaces.....Tons						
Crushed stone—						
Concrete aggregate.....Tons						

Table 407.—Production (Sales) of Stone from Canadian Quarries, by Kinds, Showing Purposes for which Used, 1945 and 1946—Concluded

For use as follows:	Granite (a)	Limestone (b)	Marble	Sandstone	Slate	Total
1946—Concluded						
Chemical—						
Flux in iron and steel furnaces.....Tons		303,599	10			303,609
\$		267,106	120			267,226
Flux in non-ferrous smelters.....Tons		111,780				111,780
\$		102,848				102,848
Glass factories.....Tons		3,887	80			3,967
\$		15,550	420			15,970
Pulp and paper mills.....Tons		247,388				247,388
\$		478,074				478,074
Sugar refineries.....Tons		9,138				9,138
\$		8,568				8,568
Other chemical uses.....Tons		195,266				195,266
\$		191,379				191,379
Pulverized stone—						
Whiting (substitute).....Tons		4,311	6,810			11,121
\$		24,691	68,400			93,091
Asphalt filler.....Tons		13,305				13,305
\$		49,733				49,733
Dusting coal mines.....Tons		5,050				5,050
\$		21,163				21,163
Agricultural purposes and fertilizer plants.....Tons		480,639				480,639
\$		1,044,651				1,044,651
Other uses.....Tons		47,155				47,155
\$		158,388				158,388
Crushed stone for manufacture of artificial stone.....Tons		2,203	1,235			3,438
\$		700	5,411			6,111
Roofing granules.....Tons	66,779	50	360		1,116	68,305
\$	290,422	75	1,800		19,917	312,214
Poultry grit.....Tons	2	11,234	3,697			14,933
\$	25	53,493	21,272			74,790
Stucco dash.....Tons	545	2,727	2,920			6,192
\$	5,497	21,281	22,800			49,578
Terrazzo chips.....Tons		970	6,305			7,275
\$		2,910	51,055			53,965
Rock wool.....Tons		1,576				1,576
\$		2,207				2,207
Rubble and riprap.....Tons	109,779	133,580		32,289	617	326,265
\$	111,599	138,784		34,805	954	286,142
Crushed stone—						
Concrete aggregate.....Tons	26,003	2,428,125		19,515		2,473,643
\$	50,235	2,062,970		40,864		2,154,069
Road metal.....Tons	83,152	2,285,474		103,407		2,472,033
\$	144,964	1,800,701		269,502		2,215,167
Railroad ballast.....Tons		799,215		328,560		1,127,775
\$		674,351		297,244		971,595
Total Canada (b).....Tons	319,354	7,217,600	21,796	495,777	1,733	8,056,260
\$	2,006,297	8,178,513	201,817	778,213	20,871	11,185,711

(a) Includes all igneous rock.

(b) Does not include limestone used in Canadian lime and cement industries but includes marl used for agricultural purposes.

Table 408.—Production of Stone for Building Purposes, Chemical Use, Cement Manufacture, Concrete Aggregate, Road Metal and Railroad Ballast, 1937-1946

Year	Building stone (a)	For chemical purposes (b)	For concrete aggregate	For road metal	For railroad ballast	For cement manufacture (c)
1937.....Tons	49,098	693,947	1,497,655	3,169,136	642,248	1,465,168
\$	746,370	626,297	1,214,181	2,522,080	570,606	2,154,069
1938.....Tons	49,666	551,737	981,739	2,721,922	86,019	1,355,689
\$	725,402	468,000	791,971	2,347,010	58,816	1,355,689
1939.....Tons	71,288	577,278	1,344,636	2,131,306	600,266	1,407,099
\$	1,344,340	523,579	1,109,028	1,773,337	522,882	1,407,099
1940.....Tons	97,336	725,685	2,673,078	2,300,613	896,408	1,784,291
\$	722,514	681,796	2,171,487	1,885,744	741,772	1,784,291
1941.....Tons	54,262	965,690	2,581,583	2,958,613	446,505	2,113,618
\$	653,077	889,574	1,986,226	2,484,393	322,348	2,113,618
1942.....Tons	24,897	1,236,044	2,924,737	2,275,706	683,317	2,186,248
\$	361,781	1,651,982	2,424,357	1,877,473	527,814	2,186,248
1943.....Tons	17,087	1,329,226	1,981,222	2,168,428	852,928	1,994,202
\$	314,428	1,330,127	1,727,889	1,989,509	704,389	1,994,202
1944.....Tons	23,142	1,109,362	1,852,335	1,498,258	869,042	1,939,900
\$	396,202	1,170,372	1,600,692	1,352,796	688,471	1,939,900
1945.....Tons	56,711	1,051,514	1,908,460	1,552,839	820,987	1,919,853
\$	751,401	1,215,169	1,596,256	1,468,045	678,205	1,919,853
1946.....Tons	70,928	871,143	2,473,643	2,472,033	1,127,775	2,625,008
\$	1,411,298	1,064,065	2,154,069	2,215,167	971,595	2,625,008

(a) Does not include monumental or ornamental stone.

(b) Does not include limestone used in Canadian lime industry which totalled 1,487,140 tons in 1946.

(c) Includes shale in 1938-1946; 1938—13,821 tons; 1939—27,241 tons; 1940—18,347 tons; 1941—26,837 tons; 1942—30,498 tons; 1943—75,460 tons; 1944—74,303 tons; 1945—70,600 tons; 1946—99,355 tons.

Table 409.—Imports into Canada and Exports of Stone, by Kinds, 1945 and 1946

		1945		1946	
		Quantity	Value	Quantity	Value
IMPORTS			\$		\$
Building stone, n.o.p.	.....cwt.	106,159	48,997	293,352	144,722
Curling stones and handles therefor	.....pair	231	5,982	1,084	28,740
Granite, rough, not hammered or chiselled	.....		42,942		158,556
Granite, sawn only	.....		22,964		44,169
Granite, monuments	.....			
Granite, manufactures of, n.o.p.	.....		9,877		16,811
Marble, rough, not hammered or chiselled	.....		9,139		43,343
Marble, sawn or sand rubbed, not polished	.....		41,229		91,077
Marble, not further manufactured than sawn for tombstones	.....		62,045		53,068
Marble, manufactures of, n.o.p.	.....		10,252		6,560
Refuse stone	.....ton	705,716	481,348	614,573	567,865
Slate roofing	.....square	439	5,276	436	8,461
Slate mantels and manufactures of slate, n.o.p.	.....		26,131		39,754
Chalk, china, cornwall or cliff stone and mica schist	.....		16,967		58,645
Mineral wool	.....ton	4,495	460,677	5,866	464,880
Whiting, gilders' whiting and Paris white	.....ton	14,159	307,201	18,038	359,693
Manufactures of stone, n.o.p.	.....		27,010		41,518
Chalk, prepared	.....		6,425		5,445
Pumice and pumice stone and lava tufa	.....		45,041		71,607
Grindstones, not mounted and not less than 36 inches in diameter	No.	466	45,494	675	65,814
Grindstones, n.o.p.	No.	549	2,381	2,304	6,500
Burrstones, rough, in blocks	No.	27	779	6	112
Ganister	No.	425	3,384	5,184	3,367
Total			1,681,541		2,280,707
EXPORTS					
Crushed stone	.....ton	904	858	777	2,083
Granite and marble, unwrought	.....ton	3,835	48,606	5,277	82,008
Dressed stone of all kinds	.....		7,331		6,311
Grindstones, manufactured	.....		19,519		35,204
Total			76,314		125,606

Table 410.—Average Number of Wage-Earners, by Months, 1945 and 1946

Month	1945				1946			
	Quarry		Dressing Works		Quarry		Dressing Works	
	Male	Female	Male	Female	Male	Female	Male	Female
January	990	1	263	3	1,155	1	455	1
February	990	1	264	3	1,159	2	479	1
March	1,076	1	315	3	1,287	2	527	1
April	1,353	1	293	3	1,767	2	570	2
May	1,717	1	323	3	2,242	3	653	2
June	1,810	1	331	3	2,397	3	648	2
July	1,837	1	369	3	2,454	3	640	2
August	1,915	1	346	3	2,455	4	649	2
September	1,943	1	341	3	2,378	4	666	2
October	1,994	1	356	3	2,303	4	631	2
November	1,719	1	382	3	2,053	4	626	2
December	1,316	1	373	3	1,580	4	583	2
Average	1,572	1	336	3	1,938	3	601	2

Table 411.—Production of Granite (*) in Canada, 1937-1946

Year	Short tons	\$	Year	Short tons	\$
1937	1,135,099	1,827,433	1942	1,366,425	1,946,249
1938	705,307	1,379,417	1943	780,422	1,522,072
1939	1,102,395	2,119,501	1944	269,964	1,303,790
1940	1,147,747	1,884,410	1945	221,630	1,284,748
1941	600,922	1,498,786	1946	319,354	2,006,297

(*) Includes all igneous rock.

The annual review by the Bureau of Mines gives the following information with regard to the quarrying of granite in Canada:

Large areas in Canada are underlain by granite and other related crystalline igneous rocks, and in a number of localities quarries in such rocks have been opened up for the production of building stone, monumental stock, riprap, etc. More than 90 percent of the Canadian output of granite in 1945 was supplied by Ontario and Quebec, and the remainder came from Nova Scotia, New Brunswick, Manitoba and British Columbia.

Prior to the war most of the Canadian production of granite was used for riprap and crushed stone and in the construction of public and semi-public buildings, and smaller quantities for monumental stock, but during the war there was little demand for dimensioned stone for building so that many of the quarries producing only this type of stone were forced to close. There was sufficient demand, however, for monumental stock for the domestic market and for export to enable a number of firms to keep their dressing sheds in operation on a small scale, and some of the larger quarries favourably situated were able to supply any demand for riprap that arose. With the prospects of extensive building construction, these companies can turn again to the production of building stone with little loss of time.

Many of the Canadian granites are suitable for monumental use, and prior to the war much of this material was used within a limited radius of various quarries, but appreciable quantities of special monumental stock such as 'reds' and 'black granites' were imported from the Scandinavian countries, notably Finland and Sweden. When shipments were cut off, Canada and the United States had to depend on their own quarries. In Canada a number of quarries produce granite of pleasing characteristics for monumental use and in the past few years there has been a small but steady increase in the domestic demand for such stone. Moreover, numerous requests from the United States for samples have been received by Canadian firms, and exports to that country have shown an appreciable increase.

Quebec continued to furnish most of the granite used in building, road foundation and other heavy construction, the leading producing areas being Stanstead, Stanstead county; Saint-Samuel, Frontenac county; Rivière-à-Pierre, Portneuf county; and Lake St. John district. Granite for monumental use is produced in the Maritime Provinces, and in Quebec, Ontario, Manitoba, and British Columbia. 'Black granite' is produced mainly in the vicinity of Lake St. John and from quarries along the north shore of Lake Superior. A quarry of this type of granite has been recently opened in Rouyn district, Quebec.

In Nova Scotia and New Brunswick the industry was again comparatively quiet. Production in Nova Scotia came from well established firms in Shelburne and Nictaux West areas and most of the material was monumental stock. In New Brunswick, the granite quarry at Hampstead was in production, and two firms at St. George produced for the monumental trade. A few tons of "black granite" was produced from the quarry at Lake Digdequash.

In Quebec, grey granite comprises over half the total output for the province and is quarried mainly in Stanstead district. At Saint-Gédéon and Saint-Joseph-d'Alma in the Lake St. John district. Le Granit National Ltée produces "black granite", which finds a ready market for monumental use and for building trim. Brodies Limited, Montreal, has its new cutting shed, erected to replace the shed destroyed by fire, in full operation. The company obtains its granite from Graniteville, Stanstead county; from Guenette, Labelle county; and from Mount Johnson, near Iberville. Stanstead Granite Quarries Company of Beebe, obtained its grey granite stock from quarries at Graniteville; its rough monumental stock was purchased from various other localities. Prospecting for some of the coloured granites that are in demand for monumental use was active in the province. Granite of deep red colour and pleasing texture is being developed in several districts, notably, near Grenville in Grenville county; and in the vicinity of Donnacona, Portneuf county.

In Ontario, the Ontario Rock Company, Toronto, quarried a trap rock at Havelock, Peterborough county, which is used mainly for road foundations, railroad ballast, and concrete aggregate.

In British Columbia, granite was produced from several well established properties. A large proportion of the B.C. stone production was andesite produced from Heddington Island for the building trade.

LIMESTONE

Table 412.—Production of Limestone(*) in Canada, 1937-1946

Year	Short tons	\$	Year	Short tons	\$
1937.....	5,542,806	4,673,942	1942.....	6,442,583	6,468,525
1938.....	4,288,507	3,864,619	1943.....	6,265,181	6,105,749
1939.....	4,149,589	3,817,551	1944.....	5,565,286	5,528,459
1940.....	6,108,591	5,126,075	1945.....	5,677,192	6,284,379
1941.....	7,151,049	6,057,727	1946.....	7,217,600	8,178,513

(*) Includes dolomite and marl; production of marl totalled 22,913 tons in 1943; 19,848 tons in 1944; 14,148 tons in 1945 and 20,363 tons in 1946.

With the large volume of building construction and with restrictions removed on the construction of the ornamental type of building, the quarrying of structural limestone was more active in 1946 than for many years. The large producers reported a busy season and a great many small operators re-opened quarries that had long been idle in order to supply local demands for cut stone and building rubble. Difficulties were experienced, however, in obtaining experienced stone cutters to work in the quarries and stone dressing plants, because in the 15 years or so that have elapsed since the cut-stone industry was similarly active very few men have learned the trade.

Quarries for the production of limestone for building purposes are worked in Quebec, Ontario, and Manitoba. Modern requirements of the building stone industry call for blocks of stone of large dimensions from which are sawn slabs and blocks of the exact size required for constructing the building. Although limestone is abundant in Canada the heavily bedded variety of desirable texture, free from cracks and other defects, and capable of being carved and otherwise worked, is not plentiful.

In Quebec, the quarries yielding heavily bedded building stone are at Saint-Marc-des-Carières in Portneuf county, and in the vicinity of Montreal. At both localities a grey limestone is obtained.

In Ontario, heavily bedded silver-grey limestone is quarried from extensive deposits near Queenston in the Niagara Peninsula, and smaller quantities of buff, and of variegated buff and grey limestone are also obtained. At Longford Mills, near Orillia, buff, silver-grey, and brown limestone, suitable for use as building stone and as marble, is available.

In Manitoba, quarries are near Tyndall. They yield mottled buff, mottled grey, and mottled variegated limestone suitable for exteriors of buildings and for use as interior decorative stone. There has been very little production in recent years.

In addition to the large quarries, the products of which normally have a wide shipping range, small quarries producing rough building stone for local use are worked intermittently near Quebec City, Montreal and Hull, in Quebec; and at Ottawa, Kingston and Warton in Ontario. Rubble is the chief product.

For industrial use limestone is marketed in a variety of forms ranging from huge squared blocks of dimension stone used in construction to extremely fine dust used chiefly as a mineral filler. For certain uses (in the wood pulp industry, for example) the limestone quarried requires little or no processing, but most of the output is crushed and screened for use as road metal, concrete aggregate, railroad ballast, and as flux in metallurgical plants. Large quantities are used in the manufacture of Portland cement, lime and various chemical products. Most of the limestone used in chemical and metallurgical industries is of the high calcium variety, but dolomite is rapidly increasing in importance as an industrial raw material.

Argillaceous dolomite is used for the manufacture of rock wool, a widely used insulating material. Five new plants, two in British Columbia, and one each in Nova Scotia, Quebec, and Ontario, were being built in 1945 and one in Ontario, previously destroyed by fire, is being rebuilt.

Pure dolomite has become an important source of magnesia, and during the latter years of World War II was an important source of magnesium metal. Magnesia and basic magnesium carbonate are made from calcined dolomite by the Pattinson process.

Dead-burned dolomite is widely used as a refractory material in basic open hearth furnaces in the steel industry. The first Canadian plant to produce dead-burned dolomite was built at Dundas, Ontario, in 1945.

Magnetitic dolomite is processed at Kilmar, Quebec, for the production of refractory products. Brucitic limestone is processed at Wakefield, Quebec, for the production of magnesia and hydrated lime.

The use of limestone in agriculture is capable of very extensive development. Though the necessity for applying limestone or lime to agricultural land to remedy deficiencies of calcium and magnesium, to neutralize soil acidity, and to maintain or increase soil fertility has been emphasized for many years, the quantity so used in Canada is still relatively small, whereas the agricultural use of limestone could well constitute one of its most important uses both from the economic and tonnage viewpoints.

MARBLE

Table 413.—Production of Marble in Canada, 1937-1946

Year	Short tons	\$	Year	Short tons	\$
1937.....	21,642	88,595	1942.....	13,824	88,209
1938.....	19,375	87,274	1943.....	11,848	68,022
1939.....	14,124	200,054	1944.....	11,829	85,374
1940.....	13,739	75,409	1945.....	13,388	113,337
1941.....	17,649	126,081	1946.....	21,796	201,817

The marble industry in Canada, in common with all belligerent countries, was relatively inactive during the war because most of the buildings erected were of the strictly utilitarian type, in which very little marble was used. With the resumption of construction of the ornamental type of buildings the demand for marble is increasing and preparations were made late in 1945 for the reopening in 1946 of quarries that have been closed for several years. Foreign marble, which has always largely dominated the Canadian market, is now obtainable only with difficulty and at higher prices than formerly because of depleted European stocks, damage to quarries and equipment during the war, and because of labour trouble. Thus the outlook for increased production of domestic marble in the near future is good.

Canada is well supplied with deposits of marble, and quarries are operated in Quebec, Ontario, Manitoba, and British Columbia. The products in recent years have been terrazzo chips, stucco dash, poultry grit, marble flour, whiting substitute, rubble and material for making artificial stone, but some squared blocks for sawing into slabs for interior decorative use have also been produced.

In Quebec, clouded grey marbles and also a black marble are obtained in the quarries of Missisquoi Stone and Marble Co. Ltd., at Phillipsburg, near the foot of Lake Champlain. Brown marble for counters and wainscoting is obtained from the building-stone quarries in the Trenton limestone at Saint-Marc-des-Carrières, Portneuf county. Red and green marble for use as terrazzo is quarried by MAB Ltée at Saint-Joseph-de-Beauce. Orford Marble Co. Ltd., a new company, commenced preparations for quarrying a variegated red, green and grey serpentinous marble near North Stukely, Shefford county, late in 1945. White dolomite is quarried and crushed by Canadian Dolomite Company, Limited, at Portage-du-Fort, Pontiac county, for terrazzo chips, stucco dash, artificial stone, and various minor products.

In Ontario, black marble from beds up to 40 inches thick, is produced by Silverton Black Marble Quarries Limited, Ottawa, at St. Albert, 30 miles southeast of Ottawa. Buff, red, white, green, and black marbles are quarried north of Madoc by Karl Stocklosar and by Connolly Marble, Mosaic and Tile Company Limited, for use as terrazzo. White Star Mine (Bolender Bros.) produces terrazzo and poultry grit at Marmora.

In Manitoba, a number of highly coloured marbles are available along the Flin Flon and Hudson Bay railroads, and also at Fisher Branch and other places, but there is no activity at present.

In British Columbia, there are many deposits of marble, but there is only a small production of white marble by Marble and Associated Products from a quarry near Victoria and by Beale Limestone Quarries on Texada Island.

There is a wide range in the price of marble depending upon the quality and rareness of colouring.

SANDSTONE

Table 414.—Production of Sandstone in Canada, 1937-1946

Year	Short tons	\$	Year	Short tons	\$
1937.....	235,165	343,871	1942.....	153,865	236,810
1938.....	101,854	213,405	1943.....	164,163	250,603
1939.....	176,265	331,830	1944.....	146,766	223,453
1940.....	176,475	305,543	1945.....	291,430	466,397
1941.....	169,885	305,528	1946.....	495,777	778,213

Canadian sandstone has been utilized extensively in the construction of many important public buildings in Canada and is finding increasing favour as a material in the construction of the better type home. The rock occurs in Canada in a variety of colours, including white, reddish brown, yellow and grey. Shipments of sandstone were made in 1946 from quarries located in all of the provinces with the exception of Prince Edward Island, Manitoba, Saskatchewan and Alberta.

The greater part of the crude output in 1945 was employed as rubble and riprap and in the crushed state for concrete, highway construction and railroad ballasting. Sandstone in British Columbia, New Brunswick and Nova Scotia has been employed in the manufacture of abrasive wheels and sharpening stones; such production is included with natural abrasives manufacture. Crude, crushed or ground quartzite sold for fluxing purposes or as silica sand is included under quartz as production.

SLATE

Table 415.—Production of Slate in Canada, 1937-1946

Year	Short tons	\$	Year	Short tons	\$
1937.....	900	5,519	1942.....	1,369	16,801
1938.....	979	6,311	1943.....	1,336	17,733
1939.....	1,149	6,760	1944.....	1,147	18,101
1940.....	1,113	7,522	1945.....	1,915	17,839
1941.....	1,296	12,562	1946.....	1,733	20,871

Canadian slate production in 1946 came entirely from the provinces of Quebec and British Columbia and represented shipments of the stone in the form of granules for roofing purposes, riprap and asphalt filling. No Canadian deposits of slate suitable for the production of high grade roofing slates or shingles have been reported as being under development in recent years.

ROOFING GRANULES

(From the annual review by the Bureau of Mines, Ottawa)

There has been a marked expansion in the granule roofing industry in Canada during the past twelve years and particularly during the past three years. About 64 per cent of the granules used are imported, however, though some of the leading manufacturers of granule roofings, as well as individuals, have been searching certain areas in Canada for rocks suitable for making the best type of granules. Apart from slates, there appear to be few such rocks in areas where they can be economically mined, crushed, and shipped to producing plants. Present production comes from three deposits in Ontario and four in British Columbia. In 1946, Canadian consumption of granules used for roofing showed a 39.5 per cent increase over that of 1945, and a further increase is expected in 1947.

The granules consist of small broken particles of rock or slate in their natural state or artificially coloured, that are affixed to asphalt sheeting. The underside of the sheeting is coated with a film of talc or fine mica and is then cut into shapes for roofing shingles or for sidings (resembling rows of bricks separated by mortar). The exposed portion of the improved shingle has an inner coating, usually of natural granules, upon which another coating of the required coloured granules is spread.

In Ontario three deposits are being quarried for granules in the vicinity of Madoc, 100 air miles east and north of Toronto. These are: a grey rhyolite deposit 5 miles northeast of Madoc; a black amphibole rhyolite 4 miles northwest of Madoc; and a greenish grey basalt 20 miles west of Madoc, near Havelock. Building Products Company, the leading Canadian manufacturer, crushes and screens the rock from these quarries at a mill near Madoc, and artificially colours the granules at a plant at Havelock, the only granule colouring plant in Canada.

In British Columbia, G. W. Richmond is quarrying a dark grey slate at McNab Creek, Howe Sound, and a greenish siliceous rock at Bridal Falls, near Chilliwack. At Kapoor on southern Vancouver Island, O. M. Brown is mining a grey black slate and, from an adjacent deposit, hard greenish rock. These two operators have crushing and screening plants in Vancouver and Victoria, respectively, where natural granules are produced and sold to roofing companies in the two cities.

In 1946, as in the previous four years, granule-coated roofings and sidings were manufactured by 10 companies which have a total of 14 plants located at Saint John in New Brunswick; Asbestos, Montreal, and Lennoxville in Quebec; Toronto, Hamilton, Brantford, and London in Ontario; Winnipeg in Manitoba; and Vancouver and Victoria in British Columbia.

Processes for colouring granules are covered by many patents. A few of the methods employed consist of: heating, which darkens the colour; adding oxides of iron and chromium and then burning; addition of sodium silicate, clay, and the required pigment; addition of zinc oxide, clay, and liquid phosphoric acid, heating and then adding the pigment. Many combinations are employed and generally the formulæ used by individual companies are closely guarded secrets.

Specifications for the types of rock that make the best granules are somewhat exacting and samples must pass severe tests. At one time they called for flat granules, and nearly all were made from slate. The present trend, however, is toward more solid angular fragments, and the use of true slate is decreasing, though in 1945, 36 per cent of the total used in Canada was slate granules (21 per cent natural and 15 per cent artificially coloured). Rocks suitable for granules should be fairly hard, of low porosity, fine grained, opaque, possess a high melting point, and break well. They should be composed mainly of silica or silicates and should be free of metallic minerals, flaky minerals, minerals with fibrous partings, and the carbonates. They should withstand weathering action over long periods, and prevent 'blistering' of the underlying asphalt caused by combination of the penetration of water and actinic rays of the sun. Coloured rocks are generally preferred and the colours (reds and greens) are often intensified artificially, but the granules must have the physical properties that will enable them to maintain the colour permanently. Slates suitable for granules should be hard and their colour should be as dark (blue-black) as pos-

sible, or else greens and reds. All granules are oiled to improve adhesion to the asphalt and to intensify the colour, but for the latter the effect is not permanent. Two mesh grades of granules are used, namely 'coarse' (10 to 28 mesh) and to a much smaller extent 'fine' (28 to 35 mesh).

Prices vary considerably depending upon the type of granule and upon whether the colour is natural or artificial. Imported granules average \$17 a ton, f.o.b. eastern Canadian plants for natural rocks and slates; \$21.15 for artificially coloured reds; \$23.40 for greens and browns; and \$33.15 for blues.

WHITING SUBSTITUTE

(From the annual review by the Bureau of Mines, Ottawa)

Whiting substitute, also referred to as domestic whiting and as marble flour, is finely pulverized white limestone, or white marble or marl. It also may be made from lime or from waste calcium carbonate sludge resulting from the manufacture of caustic soda.

White marble and white limestone when used for whiting substitutes are pulverized to degrees of fineness ranging from 200 to 400 mesh. Only marble and limestone containing very little magnesium carbonate are used for making whiting substitute, and in Canada most of it is made from white marble, though two plants have been built in Ontario to make it from marl.

By-product precipitated chalk, made from waste sludge resulting from the manufacture of caustic soda from dead ash and lime, is classed as whiting substitute, but its usefulness is restricted by the fact that it almost invariably contains a small amount of free alkali. The raw materials for its manufacture are available, but it is not made in Canada.

Whiting substitute made in Canada is used mostly in the manufacture of oilcloth, linoleum in certain kinds of rubber products, in putty, in explosives, and as a filler in newsprint, book and magazine paper. In lesser quantities it is used in the manufacture of moulded articles, cleaning compounds and polishes, as a ceramic glaze and for a number of other purposes.

Marl suitable for making whiting substitute should be white or nearly so, nearly free from grit and clayey material, and be very low in organic matter. This matter is present to some extent in all deposits of marl and renders the product unsuitable for use as a filler in products, such as putty and paint where it will come in contact with oils. The oil-absorptive capacity of whiting substitute made from marl is usually greater than that of whiting, but otherwise the physical properties are much the same.

2. Secondary Production—The Stone Products Industry

In 1946 there were 147 stone dressing works whose operations were reported separately from the quarries. These plants were engaged chiefly in cutting or polishing Canadian or imported stone to produce finished monuments or cut and dressed stone for construction purposes. Retail establishments engaged only in selling and lettering monuments have not been included. Nine producers of rock wool were also included in this industry.

Output from this industry was valued at \$9,063,895 in 1946, an increase of 74.3 per cent over the total of \$5,199,120 reported for the previous year. The 60 works in Ontario accounted for 61.5 per cent of the total output and the 43 plants in Quebec for 21.7 per cent. The average number of employees was 1,541 who were paid \$2,643,298 in salaries and wages. Materials used in the cutting and dressing processes, including stone, cost \$2,906,528. The latter figure also includes the cost of materials used in the production of rock wool. Expenditures for fuel and electricity amounted to \$293,538.

Table 416.—Principal Statistics of the Stone Products Industry, 1937-1946

Year	Number of plants	Average number of employees	Salaries and wages	Cost of fuel and electricity at works	Cost of materials at works	Gross selling value of products at works
			\$	\$	\$	\$
1937.....	229	1,159	1,352,566	122,209	1,142,885	3,371,242
1938.....	234	1,261	1,560,931	138,259	1,271,650	3,902,774
1939.....	190	1,257	1,458,780	139,438	1,259,547	3,805,989
1940.....	182	1,061	1,236,825	133,417	1,183,112	3,592,623
1941.....	173	987	1,296,534	137,842	1,244,013	3,883,496
1942.....	174	925	1,267,382	147,972	1,423,387	3,939,764
1943.....	151	857	1,256,415	138,127	1,521,308	4,098,100
1944.....	142	854	1,426,262	160,725	1,670,718	4,370,430
1945.....	144	1,055	1,665,593	196,703	1,706,599	5,199,120
1946.....	147	1,541	2,643,298	293,538	2,906,528	9,063,895

NOTE.—Profits or losses cannot be calculated from the above figures as data are not available for general expense items, such as interest, rent, depreciation, taxes, insurance, advertising, etc.

Table 417.—Production from the Stone Products Industry, by Provinces, 1945 and 1946

Province	Granite		Marble		Marble chips and dust	Limestone		Finished monuments, lettered only	Other products	Total
	Monu-ments	For building purposes	Monu-ments	For building purposes		Monu-ments and bases	For building purposes			
	\$	£	\$	\$	\$	\$	\$	\$	\$	\$
Prince Edward Is-land and New Brunswick—										
1945.....	115,497		20,121					2,265	168,788	306,671
1946.....	138,371		21,255		50			2,360	805	162,841
Nova Scotia—										
1945.....	46,402	6,000	29,241	3,460				41,325	795	127,223
1946.....	64,940	1,930	32,836					32,376	285,711	417,793
Quebec—										
1945.....	759,186	39,367	11,243	47,932	5,178	400	770	13,309	419,622	1,297,007
1946.....	1,032,244	65,403	8,915	65,531		8,123	266,076	23,366	495,503	1,965,161
Ontario—										
1945.....	928,194	6,500	166,747	54,184	1,500	29,725	289,543	70,294	1,277,106	2,823,793
1946.....	1,214,413	33,941	208,126	74,298	137	28,000	642,739	93,518	3,284,915	5,580,987
Manitoba—										
1945.....	61,218	2,122	12,095	14,064	8	2,340	225	29,881	868	122,821
1946.....	68,452	3,762	25,563	8,905	323	445	135	46,201	2,396	156,182
Saskatchewan—										
1945.....	79,185	4,500	41,438	5,300	590	13,830		5,595	38,822	189,260
1946.....	108,919	11,420	48,325	5,800	1,429	22,375	90	5,654	102,993	307,005
Alberta—										
1945.....	85,087		35,498		17,550	2,420		47,580	7,980	196,124
1946.....	144,239		54,167		25,425	4,104		69,500	4,392	301,827
British Columbia—										
1945.....	109,030	340	814	7,558			80	9,234	9,165	136,221
1946.....	84,203	1,200	2,010	15,225	100		330	64,735	5,196	172,999
Canada—										
1945.....	2,183,799	58,829	317,197	132,498	24,826	48,715	290,618	219,483	1,923,155	5,199,120
1946.....	2,855,781	117,656	401,197	169,759	27,464	63,047	909,370	337,710	4,181,911	9,063,895

Table 418.—Total Production in Canada of Dressed Building Stone, 1937-1946

Year	Granite		Marble		Limestone		Sandstone from quarries	Total
	From quarries	From dressing works	From quarries	From dressing works	From quarries	From dressing works		
	\$	\$	\$	\$	\$	\$	\$	\$
1937.....	252,346	179,557	18,297	347,405	248,659	438,450	51,893	1,536,607
1938.....	244,501	216,485	1,440	369,698	227,324	832,123	83,692	1,975,263
1939.....	561,253	438,619	145,618	174,275	349,547	664,270	101,448	2,435,030
1940.....	255,527	159,427	19,680	218,271	192,183	446,441	55,139	1,346,668
1941.....	284,803	92,899	51,535	148,294	241,298	384,265	15,016	1,218,110
1942.....	108,807	121,450	19,476	139,109	169,382	102,388	8,600	669,212
1943.....	103,691	65,868	10,745	96,630	172,198	36,021	1,300	486,453
1944.....	83,485	31,430	18,135	80,803	214,037	98,866	34,750	561,506
1945.....	97,098	58,829	18,224	132,498	464,411	290,618	78,000	1,139,678
1946.....	232,835	117,656	17,184	169,759	883,937	909,370	73,101	2,403,842

Table 419.—Total Production in Canada of Dressed Monumental and Ornamental Stone, 1937-1946

Year	Granite		Marble		Limestone		Sandstone from quarries	Total
	From quarries	From dressing works	From quarries	From dressing works	From quarries	From dressing works		
	\$	\$	\$	\$	\$	\$	\$	\$
1937.....	278,140	1,468,895	(*) 900	176,101	2,335	117,404		2,043,775
1938.....	294,001	1,515,000	2,644	127,803	79,156	109,036		2,127,640
1939.....	260,375	1,513,958	800	129,623	3,321	53,309	325	1,961,711
1940.....	223,203	1,416,298		167,805	2,218	29,861		1,839,385
1941.....	291,643	1,582,016		186,269	2,339	31,820	400	2,094,487
1942.....	356,459	1,602,854		197,189	4,513	23,435		2,184,450
1943.....	392,828	1,601,756		227,289	4,700	27,536		2,254,109
1944.....	609,542	1,871,157		290,638	4,575	48,870	918	2,825,700
1945.....	636,787	2,183,799		317,197	5,700	48,715		3,192,198
1946.....	883,336	2,855,781		401,197	7,720	63,047		4,211,081

(*) Sandstone.

Table 420.—Production of Rock Wool in Canada, by Grades, 1946

	Quantity	Selling value at works
		\$
4-inch batts.....sq. ft.	1,228,808	61,405
3-inch batts.....sq. ft.	17,749,245	729,938
2-inch batts.....sq. ft.	34,538,435	980,395
1-inch batts.....sq. ft.	1,299,020	28,413
Granulated.....cu. ft.	8,995,090	1,929,655
Bulk or loose wool.....cu. ft.	1,142,984	212,499
Industrial wool (both loose and granulated).....cu. ft.	877,662	155,794
Total.....		4,098,099

Table 421.—Cost of Materials Used in the Stone Products Industry, 1945 and 1946

	Cost at Works	
	1945	1946
	\$	\$
Stone—(a) From Canadian quarries.....	522,878	770,620
(b) Imported.....	264,784	528,673
Monuments, cut and polished, for lettering only.....	135,977	173,217
Silica sand or ground quartz.....	7,379	8,791
Slag and stone for rock wool.....	160,500	290,139
Coke for rock wool.....	114,382	238,442
All other materials.....	500,699	896,646
Total.....	1,706,599	2,906,528

CHAPTER TEN

CONTRACT DRILLING IN THE CANADIAN MINING INDUSTRY

Section 1

Diamond Drilling of Deposits Other than Fuels

There were 62 firms engaged in contract diamond drilling of Canadian mineral deposits, other than fuels, during 1946 compared with 74 in 1945. The income received from drilling operations completed by these firms in 1946 totalled \$11,786,846 against \$8,650,864 in the preceding year. The average number of employees in 1946 was estimated at 2,829 compared with 2,263 in 1945, and the amount of salaries and wages distributed during the year under review totalled \$5,285,695 as against \$3,906,545 in 1945.

The footage drilled in the Dominion by contractors during 1946 aggregated 6,260,513 feet, of which 40 per cent was completed in Ontario, 41 per cent in Quebec, 12 per cent in British Columbia, and 4 per cent in the Northwest Territories. Contract drilling was done in all provinces except Prince Edward Island. The footage drilled in 1946 was the greatest to be recorded since the initial compilation, in 1938, of the data on diamond drilling. The value of borts, ballas, carbons, castset bits, etc., purchased in 1946 by diamond drilling contractors totalled \$2,192,615 compared with \$2,018,768 in 1945.

Equipment owned by diamond drilling contractors in 1946 included 312 air or steam-driven drills, 464 gasoline-driven drills and 3 electric drills.

Table 422.—Contract Diamond Drilling Operations in Canada, 1938-1946 (Drilling operations conducted by contractors who employed diamond drills only and which were confined chiefly to the testing of metalliferous deposits)

Year	Footage drilled	Income from drilling	Average number of employees	Total salaries and wages paid
		\$		\$
1938.....	2,296,773	3,956,564	1,627	1,801,988
1939.....	2,063,292	3,013,249	2,920	1,615,615
1940.....	2,422,948	3,021,639	1,350	1,575,786
1941.....	2,793,420	3,122,487	1,455	1,535,609
1942.....	2,990,364	3,147,532	1,019	1,597,040
1943.....	2,649,708	3,072,481	896	1,493,944
1944.....	3,468,797	4,970,247	1,468	2,461,813
1945				
Nova Scotia.....	6,432	9,695	1	2,192
Quebec.....	2,166,682	4,040,776	1,075	1,800,259
Ontario.....	1,676,076	2,817,502	788	1,331,532
Manitoba.....	120,799	196,312	48	81,542
Saskatchewan.....	53,142	80,727	22	38,099
Alberta.....	29,406	138,894	27	63,678
British Columbia.....	900,605	622,788	200	325,675
Yukon.....	3,046	6,521	7	6,139
Northwest Territories.....	306,250	737,649	95	257,429
Canada.....	5,262,438	8,650,864	2,263	3,906,545
1946				
Nova Scotia.....	10,832	16,427	5	4,840
New Brunswick.....	2,719	7,419	4	2,585
Quebec.....	2,554,611	5,131,049	1,232	2,425,842
Ontario.....	2,541,084	4,809,742	1,162	2,058,747
Manitoba.....	109,547	239,010	58	91,089
Saskatchewan.....	40,989	78,893	24	36,397
Alberta.....	20,419	130,313	25	63,697
British Columbia.....	741,720	766,594	209	380,085
Yukon.....	1,700	13,040	13	10,405
Northwest Territories.....	236,892	594,359	97	212,008
Canada.....	6,260,513	11,786,846	2,829	5,285,695

Table 423.—Value of Stones, Readyset and Castset Bits Purchased by Contractors, 1938-1946

Year	Value	Year	Value
	\$		\$
1938.....	649,374	1943.....	637,070
1939.....	607,806	1944.....	810,085
1940.....	881,085	1945.....	2,018,768
1941.....	861,253	1946.....	2,192,615
1942.....	634,233		

Table 424.—Drilling Completed on Auriferous Quartz Deposits (Gold Mines) in Canada, 1945 and 1946

	Footage Drilled	
	1945	1946
Diamond drilling for exploration and testing—		
By mining companies with their own personnel and equipment.....	591,243	571,794
By diamond drilling contractors (*).....	4,011,223	4,412,958
Other diamond drilling—		
Blast hole diamond drilling—		
By mining companies with their own personnel and equipment.....	134,555	161,363
By diamond drilling contractors (*).....	420,519	466,153
Drilling by percussion or other machines (†).....	14,649,301	18,156,746

(*) Included in Table 422.

(†) Not complete as records are unavailable at certain mines.

Value of diamonds purchased by gold mining companies in 1946 totalled \$345,909 compared with \$157,144 in 1945.

Table 425.—Drilling Completed on Copper-Gold-Silver and Nickel-Copper Deposits in Canada, 1945 and 1946

	Footage Drilled	
	1945	1946
Diamond drilling for exploration and testing—		
By mining companies with their own personnel and equipment.....	76,089	158,434
By diamond drilling contractors (*).....	475,066	632,857
Other diamond drilling—		
Blast hole diamond drilling—		
By mining companies with their own personnel and equipment.....	907,598	857,409
By diamond drilling contractors (*).....	310,446	
Drilling by percussion or other machines (†).....	11,869,213	9,448,740

(*) Included in Table 422.

(†) Not complete as records are unavailable at certain mines.

Value of diamonds purchased by copper-gold-silver and nickel-copper mining companies in 1946 totalled \$253,419 compared with \$176,034 in 1945.

Table 426.—Drilling Completed on Silver-Lead-Zinc and Silver-Cobalt Deposits in Canada, 1945 and 1946

	Footage Drilled	
	1945	1946
Diamond drilling for exploration and testing—		
By mining companies with their own personnel and equipment.....	11,786	20,724
By diamond drilling contractors (*).....	55,429	87,532
Other diamond drilling—		
Blast hole diamond drilling—		
By mining companies with their own personnel and equipment.....		381,434
By diamond drilling contractors (*).....	272,508	6,537
Drilling by percussion or other machines (†).....	1,538,711	565,751

(*) Included in Table 422.

(†) Not complete as records are unavailable at certain mines.

Table 427.—Drilling Completed on Other Metal-Bearing Deposits, 1945 and 1946

	Footage Drilled (b)	
	1945	1946
Diamond drilling for exploration and testing—		
By mining companies with their own personnel and equipment.....		1,587
By diamond drilling contractors (*).....	3,725	28,465
Other diamond drilling—		
Blast hole diamond drilling—		
By mining companies with their own personnel and equipment.....	(a)	49,563
By diamond drilling contractors (*).....	(a)	
Drilling by percussion or other machines.....	800	70,185

(*) Included in Table 422.

(a) Not reported, or not complete as records are unavailable at certain mines.

(b) Includes drilling on iron, chromite, molybdenite and mercury deposits; exclusive of drilling on pitchblende deposits

Table 428.—Drilling Completed on Asbestos Deposits, 1945 and 1946

	Footage Drilled	
	1945	1946
Diamond drilling for exploration and testing—		
By mining companies with their own personnel and equipment.....	9,275	845
By diamond drilling contractors (*).....	28,703	40,880
Other diamond drilling—		
Blast hole diamond drilling—		
By mining companies with their own personnel and equipment.....	9,227	40,109
By diamond drilling contractors (*).....		3,650
Drilling by percussion or other machines (†).....	3,197,308	3,450,249

(*) Included in Table 422.

(†) Not complete as data are not reported by some firms.

Diamonds purchased by asbestos mining companies in 1946 cost \$29,980 compared with \$8,424 in 1945.

NOTE:—The total footage of contract drilling recorded in Tables 424 to 428 does not necessarily agree with the corresponding totals shown in Table 422 as drilling data are incomplete or unobtainable from some mining firms.

Section 2

Contract Drilling for Fuels

In 1946 there were 56 contractors who reported drilling for petroleum, natural gas or for other purposes. The footage drilled totalled 570,948 and the income from operations amounted to \$2,536,175 compared, respectively, with 733,721 feet and \$4,095,211 in 1945. Of the footage drilled during the year, there were 274,348 feet by cable type drills, 4,500 feet by diamond drills, and 292,100 feet by rotary drills. Employees engaged in this work in 1946 numbered 485, to whom the salaries and wages paid amounted to \$819,819. Drilling done by oil companies with their own equipment is not included in this report.

Table 429.—Drilling Conducted During 1945 and 1946 by Contractors for Petroleum, Natural Gas, and for Other Purposes not Included in Section I of this Report

Province	Footage Drilled		Footage Drilled		Footage Drilled		Gross income from drilling	Average number of employees	Total salaries and wages and paid
	For Petroleum		For Gas		For Other Purposes				
	Type of Drill		Type of Drill		Type of Drill				
	Cable Diamond Rotary		Cable Diamond Rotary		Cable Diamond Rotary				
		Feet		Feet		Feet	\$	Number	\$
1945									
Nova Scotia.....								10	15,507
New Brunswick.....							35,420		
Quebec.....	2,119						60,588	20	13,681
Ontario.....	7,597						432,393	102	119,335
Manitoba.....			166,551			22,194	651,007	3	4,043
Saskatchewan.....	219		1,886			7,584	651,007	96	220,898
Alberta.....				7,512		1,114	2,880,221	458	851,419
British Columbia.....	397,723		2,782	30,266					
Northwest Territories.....	4,550								
Yukon.....									
Canada	14,485	470,912	171,519	37,778	38,499	528	4,095,211	689	1,224,813
1946									
Nova Scotia.....								12	13,117
New Brunswick.....							56,981		
Quebec(*).....									
Ontario.....	18,233		212,609			10,911			
Manitoba.....			1,306						
Saskatchewan.....				18,295					
Alberta.....	469		2,925	4,500		9,570	234,929	70	95,544
British Columbia.....			174,431	17,545		2,293	1,763,903	287	553,955
Northwest Territories.....									
Canada	18,702	255,360	216,840	4,500	38,807	900	2,536,175	465	819,819

(*) Included with Nova Scotia.

DIRECTORY OF FIRMS, 1946

In the following pages the names and addresses of all the principal operators in the Canadian mining industry are given; also the location of the properties worked in 1946.

METAL MINING INDUSTRIES

Active Operators in The Canadian Auriferous Quartz Mining Industry

Name	Head or Executive Office Address	Location
NOVA SCOTIA—		
Aulenback Mines.....	Box 127, Bridgewater.....	Lunenburg
Consolidated Mining & Smelting Co. of Canada Ltd.....	215 St. James St. W., Montreal, Quebec.....	Caribou Mines
Queens Mines Ltd.....	297 Agricola St., Halifax.....	Malaga
R-Y-Mines.....	Gorham St., Liverpool.....	Mill Village
QUEBEC—		
Abenakis Mines Ltd.....	Room 305, 350 Bay St., Toronto, Ontario.....	Beauchastel Tp.
Abitibi Ventures Ltd.....	249, rue St-Jacques-ouest, Montreal.....	Val d'Or
Adele Malartic Mines Ltd.....	226 Bay St., Toronto, Ontario.....	Malartic Tp.
Adanac Quebec Mines Ltd.....	Room 403, 100 Adelaide St. W., Toronto, Ont.....	Rouyn Tp.
Adelmont Gold Mines Ltd.....	Suite 101, 184 Bay St., Toronto, Ont.....	Louvicoourt
Aiguebelle Goldfields Ltd.....	Suite 1010, 100 Adelaide St. W., Toronto, Ont.....	Aiguebelle Tp.
Alger Gold Mines Ltd.....	Room 403, 357 Bay St., Toronto, Ont.....	Cadillac
Alta Mines Ltd.....	132, rue St-Jacques-ouest, Montreal.....	Tiblemont
Amlartic Gold Mines Ltd.....	Room 1008, 330 Bay St., Toronto, Ont.....	Vassan Tp.
Anglo-Rouyn Mines Ltd.....	Room 706, 100 Adelaide St. W., Toronto, Ont.....	Rouyn Tp.
Annamaque Mines Ltd.....	Room 501, 67 Yonge St., Toronto, Ont.....	Bourlamaque Tp.
Ansley Gold Mines Ltd.....	Suite 1008, 330 Bay St., Toronto, Ont.....	Pershing Tp.
Arntfield Mining Corp. Ltd.....	Arntfield.....	Beauchastel Tp.
Astoria Quebec Mines Ltd.....	70 St. Paul St., Quebec.....	Rouyn Tp.
Aubelle Mines Ltd.....	Room 310, 100 Adelaide St. W., Toronto, Ont.....	Guillet Tp.
Aurora Gold Mines Ltd.....	67 Yonge St., Toronto, Ont.....	Vauquelin Tp.
Avila Lingeris Gold Mines Ltd.....	Suite 407, 26 Queen St. E., Toronto, Ont.....	Desboues Tp.
Aumaque Gold Mines Ltd.....	Room 310, 100 Adelaide St. W., Toronto, Ont.....	Bourlamaque Tp.
Bacola Mining Explorations Ltd.....	515 Jarvis St., Toronto, Ont.....	Malartic
Bargold Mines Ltd.....	119 Evans Ave., Toronto, Ont.....	Barraute Tp.
Bar-Lan Gold Mines.....	215 St. James St. W., Montreal.....	Barraute Tp.
Beacon Mining Co. Ltd.....	Bourlamaque.....	Louvicoourt Tp.
Barbados Gold Mines Ltd.....	80 Richmond St. W., Toronto, Ontario.....	Joannes Tp.
Beauchance Mines Ltd.....	Room 1311, 44 Victoria St., Toronto, Ont.....	Beauchastel Tp.
Beau Rand Gold Mines Ltd.....	320 Bay St., Toronto, Ont.....	Beauchastel Tp.
Beauverny Gold Mines Ltd.....	Chambre 616, 109, rue Craig-ouest, Montreal.....	Duvernay Tp.
Belec Courville Mines Ltd.....	24 King St. W., Toronto, Ont.....	Courville Tp.
Belfast Mines Ltd.....	307 Central Building, Toronto, Ont.....	Duprat Tp.
Bevcourt Mines Ltd.....	360 St. James St. W., Montreal.....	Louvicoourt Tp.
Big Game Mines Ltd.....	100 Adelaide St. W., Toronto, Ont.....	Barraute Tp.
Blondor Quebec Mines Ltd.....	Suite 1008, 330 Bay St., Toronto, Ont.....	Blondeau Tp.
Bluegrass Raymond Mines Ltd.....	Room 503, 357 Bay St., Toronto, Ont.....	Vauquelin Tp.
Bluesone Pershing Mines Ltd.....	Suite 1008, 330 Bay St., Toronto, Ont.....	Haig Tp.
Bocabois Gold Mines Ltd.....	Room 209, 330 Bay St., Toronto, Ont.....	Testor Tp.
Bonsecour Mines Ltd.....	307 Central Bldg., Toronto, Ont.....	Carpentier Tp.
Bonville Gold Mines Ltd.....	Suite 310, 100 Adelaide St. W., Toronto, Ont.....	Villebon Tp.
Borler Malartic Gold Mines Ltd.....	Suite 706, 100 Adelaide St. W., Toronto, Ont.....	Cadillac Tp.
Bourlamaque Central Mines (1945) Ltd.....	330 Bay St., Toronto, Ont.....	Bourlamaque Tp.
Bouscadillac Gold Mines Ltd.....	85 Richmond St. W., Toronto, Ont.....	Bousquet Tp.
Bouzan Gold Mines Ltd.....	24 King St. W., Toronto, Ont.....	Joannes Tp.
Boycon Pershing Gold Mines, Ltd.....	Room 209, 330 Bay St., Toronto, Ont.....	Vauquelin Tp.
Bradnor Malartic Mines Ltd.....	226 Bay St., Toronto, Ontario.....	Malartic Tp.
Bræ-Breest Gold Mines Ltd.....	204, 80 Richmond St. W., Toronto, Ont.....	Carpentier Tp.
Bremore Quebec Mines Ltd.....	355 St. James St. W., Montreal.....	Guillet Tp.
Bruell Consolidated Mines Ltd.....	Suite 1010, 100 Adelaide St. W., Toronto, Ont.....	Vauquelin Tp.
Budbois Gold Mines Ltd.....	Room 209, 330 Bay St., Toronto, Ont.....	Destor Tp.
Buffadison Gold Mines Ltd.....	603 Royal Bank Bldg., Toronto, Ont.....	Louvicoourt Tp.
Cadillac Mines Ltd.....	11 King St. W., Toronto, Ont.....	Cadillac Tp.
Cadier Bousquet.....	100 Adelaide St. W., Toronto, Ont.....	Bousquet Tp.
Canadian Malartic Gold Mines Ltd.....	25 King St. W., Toronto, Ont.....	Malartic Tp.
Celta Development & Mining Co. Ltd.....	465 St. John St., Montreal.....	Malartic Tp.
Centremaque Gold Mines Ltd.....	Room 605, 407 McGill St., Montreal.....	Bourlamaque Tp.
Cheskirk Mines Ltd.....	Room 310, 100 Adelaide St. W., Toronto, Ont.....	Rouyn Tp.
Chimo Gold Mines Ltd.....	24 King St., W., Toronto, Ont.....	Vauquelin Tp.
Christo Quebec Gold Mines.....	100 Adelaide St. W., Toronto, Ont.....	Bousquet Tp.
Citralam Malartic Mines Ltd.....	226 Bay St., Toronto, Ont.....	Malartic Tp.
Clarnor Malartic Mines Ltd.....	226 Bay St., Toronto, Ont.....	Dubuisson Tp.
Colcourt Mines Ltd.....	360 St. James St. W., Montreal.....	Bourlamaque
Columbiere Mines Ltd.....	Room 501, 77 Yonge St., Toronto, Ont.....	Bourlamaque Tp.
Claverny Gold Mines Ltd.....	294 Outremont Ave., Montreal.....	Duvernay Tp.
Consolidated Beattie Mines Ltd.....	25 King St., Toronto, Ont.....	Duparquet

DIRECTORY OF FIRMS—Continued

Active Operators in the Canadian Auriferous Quartz Mining Industry—Continued

Name	Head or Executive Office Address	Location
QUEBEC—Continued		
Consolidated Central Cadillac Mines Ltd.	132 St. James St. W., Montreal	Cadillac Tp.
Conti-Mac Mines Ltd.	1112 Star Building, Toronto, Ont.	Dufresnoy Tp.
Conway Gold Mines	Bellettre.	Guillet Tp.
Courtmont Gold Mines Ltd.	25 King St. W., Toronto, Ont.	Louvicoourt Tp.
Courneou Gold Mines Ltd.	320 St. James St. W., Montreal	Louvicoourt Tp.
Courageous Gold Mines Ltd.	326 Bay St., Toronto, Ont.	Louvicoourt Tp.
Croinor Pershing Mines Ltd.	Senneterre.	Pershing Tp.
Cross Fault Gold Mines Ltd.	80 Richmond St. W., Toronto, Ont.	Clery Tp.
Croydon-Rouyn Mines Ltd.	Room 501, 67 Yonge St., Toronto, Ont.	Rouyn Tp.
Cyprus Mines Ltd.	100 Adelaide St. W., Toronto, Ontario.	Dufresnoy Tp.
D'Aragon Mines Ltd.	1323, 67 Yonge St., Toronto, Ont.	Bourlamaque Tp.
De Clercq Mining Ltd.	276 St. James St. W., Montreal	Beauce Co.
Destorada Mines Ltd.	26 Adelaide St. W., Toronto, Ont.	Destor Tp.
Diaterre Gold Mines Ltd.	67 Yonge St., Toronto, Ont.	Guillet Tp.
Dikor Mines Ltd.	Malartic.	Louvicoourt Tp.
Dome Exploration Co. (Quebec) Ltd.	Bourlamaque	Tavernier Tp.
Donalda Mines Ltd.	Box 660, Noranda	Rouyn Tp.
Donrand Mines Ltd.	100 Adelaide St. W., Toronto, Ont.	Rouyn Tp.
Don-X Mines Ltd.	100 Adelaide St. W., Toronto, Ontario.	Dufresnoy Tp.
Double Strike Mines Ltd.	201 Park Building, Windsor, Ontario.	Destor Tp.
Dubuisson Goldfields Ltd.	355 St. James St. W., Montreal	Dubuisson Tp.
Dukel Gold Mines Ltd.	710, 36 Toronto St., Toronto, Ont.	Duprat Tp.
Dufresnoy Mines Ltd.	2810, 25 King St. W., Toronto, Ont.	Dufresnoy Tp.
Duquesne Mining Co.	112 Yonge St., Toronto, Ont.	Destor Tp.
Du Reine Mines Ltd.	710, 36 Toronto St., Toronto, Ont.	La Reine Tp.
Duvay Gold Mines Ltd.	Suite 501, 67 Yonge St., Toronto, Ont.	Duverney Tp.
East Amphi Gold Mines Ltd.	Malartic.	Malartic
Eastmont Larder Lake Gold Mines Ltd.	330 Bay St., Toronto, Ont.	Louvicoourt Tp.
East Malartic Mines Ltd.	355 St. James St. W., Montreal	Norrie
East Trecesson Gold Mines Ltd.	Edifice Aldred, Place d'Armes, Montreal	Trecesson
Elder Mines Ltd.	11 King St. W., Toronto, Ont.	Noranda
Eldona Gold Mines Ltd.	413 Temple Building, Toronto, Ont.	Rouyn Tp.
Elmac Malartic Mines Ltd.	403, 357 Bay St., Toronto, Ont.	Dubuisson Tp.
El Sol Gold Mines Ltd.	100 Adelaide St. W., Toronto, Ont.	Bourlamaque Tp.
Fontana Mines (1945) Ltd.	437 St. James St. W., Montreal	Duverny Tp.
Formaque Gold Mines Ltd.	610 St. James St., Montreal	Bourlamaque Tp.
Francœur Gold Mines Ltd.	941 Dominion Square Building, Montreal	Arntfield
Gamma Mines (Quebec) Ltd.	Bourlamaque	Bourlamaque Tp.
Gaymont Mines Ltd.	184 Bay St., Toronto, Ont.	Dufresnoy Tp.
Gilmont Mines Ltd.	90 Perreault St., Rouyn	Dasserrat Tp.
Glencoe Mining Co. Ltd.	112 Yonge St., Toronto, Ont.	Rouyn Tp.
Glennivet Gold Mines Ltd.	184 Bay St., Toronto, Ont.	Bourlamaque Tp.
Golconda Mines Ltd.	276 St. James St. W., Montreal	Duparquet
Goldora Mines Ltd.	132 St. James St. W., Montreal	Bourlamaque Tp.
Goldvue Mines Ltd.	85 Richmond St. W., Toronto, Ont.	Amos
Gwillim Lake Gold Mines	67 Yonge St., Toronto, Ont.	Gwillim Lake
Habitant Gold Mines Ltd.	36 Toronto St., Toronto, Ont.	Beauchastel Tp.
Hard Rock Gold Mines	Geraldton, Ont.	Aiguebelle Tp.
Harricana Gold Mines Inc.	Room 209, 330 Bay St., Toronto, Ont.	Bourlamaque Tp.
Hayes Cadillac Mines Ltd.	336 Bay St., Toronto, Ontario.	Louvicoourt Tp.
Heva Gold Mines Ltd.	100 Adelaide St. W., Toronto, Ontario.	Joannes Tp.
Hasco Gold Mines Ltd.	357 Bay St., Toronto, Ontario.	Joannes Tp.
Hugh Malartic Mines Ltd.	226 Bay St., Toronto, Ontario.	Malartic Tp.
Inseo Mines Ltd.	355 St. James St. W., Montreal	Dufresnoy Tp.
Inspiration Mining & Development Co. Ltd.	184 Bay St., Toronto, Ont.	Vauquelin Tp.
Jolin Bourlamaque Mines Ltd.	Amos	Bourlamaque Tp.
Kalbrook Co. Ltd.	302 Bay St., Toronto, Ont.	Pascalis Tp.
Kenda Pershing Mines Ltd.	Senneterre.	Pershing Tp.
Kiska Gold Mines Ltd.	26 Queen St. E., Toronto, Ont.	Duvernay Tp.
Klondike Destor Gold Mining Co. Ltd.	413 Temple Building, Toronto, Ontario	Destor Tp.
Lake Opawica Mines Ltd.	516 Canada Cement Building, Montreal	Dubuisson Tp.
Lamaque Mining Co. Ltd.	Bourlamaque	Bourlamaque
Louvicoourt Goldfield Corp.	1604 Edifice Aldred, Montreal	Louvicoourt Tp.
Maebart Mines Ltd.	1102 Central Building, Toronto, Ont.	Bourlamaque Tp.
Malartic Gold Fields Ltd.	355 St. James St. W., Montreal	Fourniere Tp.
Malartic Lakeshore Gold Mines Ltd.	132 St. James St. W., Montreal	Courville Tp.
Malartic River Mines Ltd.	67 Yonge St., Toronto, Ont.	Malartic Tp.
Mallich Quebec Gold Mines Ltd.	Suite 1024, 85 Richmond St. W., Toronto, Ont.	Duverny Tp.
Marbendor Malartic Mines Ltd.	710 Excelsior Life Building, Toronto, Ont.	Fourniere Tp.
Marlon Rouyn Ltd.	Room 17, 24 King St. W., Toronto, Ont.	Rouyn Tp.
Matico Mines Ltd.	Room 102, 112 Yonge St., Toronto, Ont.	Barraute Tp.
Megiscane Mines Ltd.	620, 12 Richmond St. E., Toronto, Ont.	Tavernier Tp.
Metro Gold Mines Ltd.	19 Richmond St. W., Toronto, Ont.	Beauchastel Tp.
Mic Mac Mines Ltd.	c/o Royal Trust Company, Montreal	Pershing Tp.
Monpas Mines Ltd.	159 Craig St. W., Montreal	Duverny Tp.
Montdono Gold Mines Ltd.	80 Richmond St. W., Toronto, Ontario.	Joannes Tp.
Mylamaque Mines Ltd.	200 Bay St., Toronto, Ont.	Louvicoourt Tp.
New Bidlamaque Gold Mines Ltd.	217 Bay St., Toronto, Ont.	Bourlamaque Tp.
New Louvre Mines Ltd.	1700 Royal Bank Bldg., Toronto, Ont.	Louvicoourt Tp.
Newport Gold Mines Ltd.	85 Richmond St. W., Toronto, Ont.	Amos
Norbenite Malartic Mines Ltd.	330 Bay St., Toronto, Ont.	Vassan Tp.
Norcoot Gold Mines Ltd.	1700 Royal Bank Building, Montreal	Louvicoourt Tp.
Norram Gold Mines Ltd.	24 King St. W., Toronto, Ont.	Bousquet Tp.
Norocona Gold Mines Ltd.	603 Royal Bank Building, Toronto, Ont.	Rouyn Tp.

DIRECTORY OF FIRMS—Continued

Active Operators in the Canadian Auriferous Quartz Mining Industry—Continued

Name	Head or Executive Office Address	Location
QUEBEC—Concluded		
Norseman Mines Ltd.	100 Adelaide St. W., Toronto, Ont.	Bourlamaque
Norterre Mines Ltd.	80 Richmond St. W., Toronto, Ont.	Guillet Tp.
O'Brien Gold Mines Ltd.	Kewagama.	Cadillac Tp.
Orcour Gold Mines Ltd.	357 Bay St., Toronto, Ont.	Louvicourt Tp.
Orenada Gold Mines Ltd.	330 Bay St., Toronto, Ont.	Bourlamaque Tp.
Pandora Limited.	Cadillac.	Cadillac Tp.
Paquin Gold Mines Ltd.	Belleville.	Guillet Tp.
Paramaque Mines Ltd.	36 Toronto St., Toronto, Ont.	Bourlamaque Tp.
Parterre Gold Mines Ltd.	85 Richmond St. W., Toronto, Ont.	Blondeau Tp.
Pen-Rey Gold Mines Ltd.	330 Bay St., Toronto, Ont.	Rouyn Tp.
Pepmont Gold Mines Ltd.	26-28 Adelaide St. W., Toronto, Ont.	Rouyn Tp.
Perron Gold Mines Ltd.	Perron.	Perron
Pershing Manitou Gold Mines Ltd.	132, rue St-Jacques-ouest, Montreal.	Courville
Pershon Gold Mines Ltd.	67 Yonge St., Toronto, Ont.	Pershing Tp.
Phelps Gold Mines Ltd.	85 Richmond St. W., Toronto, Ontario.	Duprat Tp.
Pinnacle Gold Mines Ltd.	Suite 204, 80 Richmond St. W., Toronto, Ont.	Privat Tp.
Pitt Gold Mining Co. Ltd.	Room 712, 80 King St. W., Toronto, Ont.	Duparquet Tp.
Plexore Rouyn Gold Mines Ltd.	80 Richmond St. W., Toronto, Ont.	Rouyn Tp.
Powell Rouyn Gold Mines Ltd.	Noranda.	Rouyn Tp.
Quesabe Mines Limited.	512, 320 Bay St., Toronto, Ont.	Duprat Tp.
Quintal Quebec Gold Mines Ltd.	18 Toronto St., Toronto, Ont.	Villebon Tp.
Randona Quebec Gold Mines Ltd.	330 Bay St., Toronto, Ont.	Dufresnoy Tp.
Record-Rouyn Mines Ltd.	67 Yonge St., Toronto, Ont.	Beauchastel Tp.
Regcourt Gold Mines Ltd.	1700 Royal Bank Building, Montreal.	Louvicourt Tp.
Renfort Gold Mines Ltd.	100 Adelaide St. W., Toronto, Ont.	Dasserat Tp.
Resenor Gold Mines Ltd.	38 King St. W., Toronto, Ont.	Perron
Ribagao Rouyn Mines Ltd.	36 Toronto St., Toronto, Ont.	Beauchastel Tp.
Rico Rouyn Mines Ltd.	710, 36 Toronto St., Toronto, Ont.	Beauchastel Tp.
Rooder Mines Ltd.	199 Bay St., Toronto, Ontario.	Dubuisson Tp.
Rochette Gold Mines Ltd.	540, rue Boucher, Montreal.	Taschereau
Rockbridge Gold Mines Ltd.	Room 22, 9 Toronto St., Toronto, Ont.	Clermont Tp.
Rolac Mines Ltd.	Room 528, 67 Yonge St., Toronto, Ont.	Vassan Tp.
Rouyn Merger Gold Mines Ltd.	603-4 Royal Bank Building, Toronto, Ont.	Rouyn Tp.
Roybar Chibougamau Mines Ltd.	67 Yonge St., Toronto, Ont.	Chibougamau
Ruscana Mines Ltd.	100 Adelaide St. W., Toronto, Ont.	Vauquelin Tp.
Seaforth Mines Ltd.	400 Notre Dame St. W., Montreal.	Duverny Tp.
Senator-Rouyn Ltd.	45A Main St. Hull.	Rouyn Tp.
Senvil Mines Ltd.	215 St. James St. W., Montreal.	Bourlamaque Tp.
Sepha Mines Ltd.	21 King St. E., Toronto, Ont.	Lake Dufault
Seventh Malartic Mines Ltd.	Perron.	Dubuisson Tp.
Shawkey (1945) Mines Ltd.	80 King St. W., Toronto, Ont.	Dubuisson Tp.
Silveryn Gold Mines Ltd.	100 Adelaide St. W., Toronto, Ont.	Duverny Tp.
Sigma Mines (Quebec) Ltd.	Bourlamaque.	Bourlamaque
Siscoe Gold Mines Ltd.	1010 St. Catherine St. W., Montreal.	Abitibi
Sladen-Malartic Mines Ltd.	56 Sparks St., Ottawa, Ont.	Malartic Tp.
Snowshoe Gold Mines Ltd.	603 Royal Bank Building, Toronto, Ont.	Val d'Or
Soma-Duverny Gold Mines Ltd.	905 Aldred Building, Montreal.	Amos
South Dufault Mines Ltd.	360 St. James St. W., Montreal.	Rouyn Tp.
South Duquesne Mines Ltd.	112 Yonge St., Toronto, Ont.	Destor Tp.
Stadacona Mines (1944) Ltd.	Rouyn.	Rouyn Tp.
Steeber Malartic Mines Ltd.	171 Yonge St., Toronto, Ont.	Malartic Tp.
Sullivan Consolidated Mines Ltd.	1604 Aldred Building, Montreal.	Dubuisson Tp.
Thurbois Mines Ltd.	Room 201, 29 Park St., Windsor, Ontario.	Destor Tp.
Toburn Gold Mines Ltd.	1809 Royal Bank Building, Toronto, Ont.	Dasserat Tp.
Tromac Mines Ltd.	100 Adelaide St., Toronto, Ontario.	Dufresnoy
Twin Fault Mines Ltd.	100 Adelaide St., Toronto, Ont.	Villebon Tp.
Union Mining Corp.	465 St. John St., Montreal.	Bourlamaque
Val d'Or Bell Mines Ltd.	307 Central Building, Toronto, Ont.	Louvicourt Tp.
Val d'Or Mineral Holdings Ltd.	25 King St. W., Toronto, Ont.	Bourlamaque Tp.
Vauze Dufault Mines Ltd.	1112 Star Building, Toronto, Ont.	Dufresnoy Tp.
Vicour Mines Ltd.	80 King St. W., Toronto, Ont.	Louvicourt Tp.
Vinray Malartic Mines Ltd.	226 Bay St., Toronto, Ont.	Malartic Tp.
Wasa Lake Gold Mines Ltd.	603 Royal Bank Building, Toronto, Ont.	Arntfield
Wendell Gold Mines Ltd.	231 St. James St. W., Montreal.	Landrienne Tp.
West Malartic Mines Ltd.	7000 Jeanne-Mance St., Montreal.	Cadillac Tp.
Westville Mines Ltd.	36 Toronto St., Toronto, Ont.	Villebon Tp.
Wettring Gold Mines Ltd.	Duparquet.	Duparquet
Wildor Gold Mines Ltd.	357 Bay St., Toronto, Ont.	Bourlamaque Tp.
Wingait Gold Mines Ltd.	80 Richmond St. W., Toronto, Ont.	Beauchastel Tp.
Wright Rouyn Gold Ltd.	357 Bay St., Toronto, Ont.	Rouyn Tp.
Zakor Gold Mines Ltd.	26 Nepean St., Ottawa, Ont.	Louvicourt Tp.
ONTARIO—		
<i>Porcupine Area—</i>		
Anson-Cartwright Mines Ltd.	Room 209, 330 Bay St., Toronto.	Matheson
Aquarius Porcupine Gold Mines Ltd.	Room 706, 100 Adelaide St. W., Toronto.	Macklem Tp.
Aunor Gold Mines Ltd.	1600 Royal Bank Building, Toronto.	Timmins
Argyll Gold Mines Ltd.	Room 1409, 330 Bay St., Toronto.	Matheson
Bonetall Gold Mines Ltd.	Room 1705, 372 Bay St., Toronto.	Pamour
Broulan Porcupine Mines Ltd.	Room 1705, 372 Bay St., Toronto.	Pamour
Buffalo Ankerite Gold Mines Ltd.	P.O. Box 533, South Porcupine.	Deloro Tp.
Chenault Gold Mines Ltd.	Suite 312, 9 Richmond St. E., Toronto.	McArthur Tp.
Clavos Porcupine Mines Ltd.	Suite 1024, 85 Richmond St. W., Toronto.	German Tp.
Clodan Gold Mines Ltd.	119 Williamson Rd., Toronto.	Matheson
Coniaurum Mines Ltd.	25 King St. W., Toronto.	Schumacher

DIRECTORY OF FIRMS—Continued

Active Operators in the Canadian Auriferous Quartz Mining Industry—Continued

Name	Head or Executive Office Address	Location
ONTARIO—Continued		
<i>Porcupine Area—</i>		
Cunigold Mines Ltd.	Room 302, 57 Queen St. W., Toronto	Mann Tp.
Dale Gold Mines Ltd.	Suite 504, 357 Bay St., Toronto	Harker Tp.
Delnite Mines Ltd.	P.O. Box 590, Timmins	Deloro Tp.
Denallen Gold Mines Ltd.	36 Toronto St., Toronto	Denton Tp.
Dome Mines Ltd.	36 Toronto St., Toronto	Tisdale Tp.
Edgewater Porcupine Gold Mines Ltd.	314 Metropolitan Building, Toronto	Night Hawk Lake
Golden Arrow Mines Ltd.	Room 428, 67 Yonge St., Toronto	Ramore
Goldhawk Porcupine Mines Ltd.	Suite 1107, 67 Yonge St., Toronto	Cody Tp.
Hallnor Mines Ltd.	Pamour	Whitney Tp.
Hollinger Consolidated Gold Mines Ltd.	Timmins	Timmins
Hoyle Mining Company Ltd.	P.O. Box 997, Haileybury	Pamour
Jasper Porcupine Mines Ltd.	43 Colborne St., Toronto	Deloro Tp.
Jowsey Denton Gold Mines Ltd.	Room 1701, 373 Bay St., Toronto	Carscallen Tp.
McIntyre Porcupine Mines Ltd.	Schumacher	Schumacher
Pamour Porcupine Mines Ltd.	Pamour	Pamour
Paymaster Consolidated Mines Ltd.	Box 508, South Porcupine	South Porcupine
Preston-East Dome Mines Ltd.	South Porcupine	South Porcupine
Malga Porcupine Gold Mines Ltd.	Room 808, 85 Richmond St. W., Toronto	South Porcupine
Naybob (1945) Gold Mines Ltd.	85 Richmond St. W., Toronto	Deloro Tp.
Porcupine Reef Gold Mines Ltd.	372 Bay St., Toronto	Pamour
Porcupine Southgate Mines Ltd.	100 Adelaide St. W., Toronto	Deloro Tp.
New Electra Porcupine Gold Mines Ltd.	Room 706, 100 Adelaide St. W., Toronto	Macklem Tp.
Wilcarr Mines Ltd.	12th floor, Star Building, 80 King St. W., Toronto	Wilkie Tp.
<i>Kirkland Lake Area—</i>		
Bidgood Kirkland Gold Mines Ltd.	Room 504, 357 Bay St., Toronto	Lebel Tp.
Darnac Gold Mines Ltd.	Room 303, 156 Yonge St., Toronto	Lebel Tp.
Glenora Gold Mines Ltd.	Room 3100, 25 King St., Toronto	Lebel Tp.
Hudson-Rand Gold Mines Ltd.	Box 700, New Liskeard	Kirkland Lake
Kirkland Golden Gate Mines Ltd.	Room 411, 371 Bay St., Toronto	Swastika
Kirkland Lake Gold Mining Co. Ltd.	Chaput Hughes	Teck Tp.
Lake Shore Mines Ltd.	Kirkland Lake	Kirkland Lake
Macassa Mines Ltd.	85 Richmond St. W., Toronto	Kirkland Lake
Northland Mines (1940) Ltd.	Suite 32, 171 Yonge St., Toronto	Dobie
Queenston Gold Mines Ltd.	1101 Federal Building, Toronto	Gauthier Tp.
Sylvanite Gold Mines Ltd.	Box 670, Kirkland Lake	Kirkland Lake
The Teck-Hughes Gold Mines Ltd.	14 Finkle St., Woodstock	Kirkland Lake
Toburn Gold Mines Ltd.	1809 Royal Bank Building, Toronto	Kirkland Lake
Upper Canada Mines Ltd.	1101 Federal Building, Toronto	Dobie
Wright-Hargreaves Mines Ltd.	Fort Erie	Kirkland Lake
<i>Larder Lake Area—</i>		
Amalgamated Larder Mines Ltd.	12th floor, 80 King St. W., Toronto	Larder Lake
Armistice Gold Mines Ltd.	Room 706, 100 Adelaide St. W., Toronto	McGarry Tp.
Big Game Mines Ltd.	Room 501, 67 Yonge St., Toronto	Guibord Tp.
Chesterville Mines Ltd.	330 Bay St., Toronto	McGarry Tp.
Harlight Gold Mines Ltd.	Doane Hall, Aurora	Harker Tp.
Highridge Mining Co. Ltd.	Room 209, 330 Bay St., Toronto	McGarry Tp.
Kerr-Addison Gold Mines Ltd.	Room 1108, 80 King St. W., Toronto	McGarry Tp.
Larder "U" Island Mines Ltd.	Room 209, 330 Bay St., Toronto	McGarry Tp.
Omega Gold Mines	Larder Lake	McVittie Tp.
Martin-Bird Gold Mines Ltd.	32 Prospect Ave., Kirkland Lake	Hearst Tp.
Mary Ann Mines Ltd.	Room 403, 100 Adelaide St. W., Toronto	Larder Lake
Olivet Gold Mines Ltd.	156 Yonge St., Toronto	Gauthier Tp.
Temple Gold Mines Ltd.	11 King St. W., Toronto	Playfair Tp.
Tovarich-Larder Gold Mines Ltd.	Room 1701, 373 Bay St., Toronto	McIlroy Tp.
Wadesa Gold Mines Ltd.	62 Government Road West, Kirkland Lake	Gauthier Tp.
<i>Matachewan Area—</i>		
Central Matachewan Mining Co.	331 Bay St., Toronto	Baden Tp.
Young-Davidson Mines Ltd.	Timmins	Powell Tp.
Laclothian Mines Ltd.	Suite 1001, 85 Richmond St. W., Toronto	Midlothian Tp.
Matachewan Consolidated Mines Ltd.	25 King St. W., Toronto	Powell Tp.
Jacaranda Gold Mines Ltd.	365 Bayview Ave., Leaside	Cairo Tp.
<i>Sudbury Area—</i>		
Chellow Gold Mines Ltd.	504, 357 Bay St., Toronto	Esther Tp.
Kalbrook Mining Co. Ltd.	Room 1405, 302 Bay St., Toronto	Penhorwood
Jerome Gold Mines Ltd.	Room 602, 350 Bay St., Toronto	Osway Tp.
Merit Gold Mines Ltd.	Room 403, 100 Adelaide St. W., Toronto	Howrey
Renabie Mines Ltd.	Room 1001, 85 Richmond St. W., Toronto	Missanabie
Rush Lake Gold Mines Ltd.	Room 504, 357 Bay St., Toronto	Marion Tp.

DIRECTORY OF FIRMS—Continued

Active Operators in the Canadian Auriferous Quartz Mining Industry—Continued

Name	Head or Executive Office Address	Location
ONTARIO—Concluded		
<i>Thunder Bay Area—</i>		
Charles Long Lac Gold Mines Ltd.....	Suite 1104, 67 Yonge St., Toronto.....	Long Lac
Draco Mines Ltd.....	Suite 1001, 85 Richmond St., Toronto.....	Long Lac
Hard Rock Gold Mines Ltd.....	Geraldton.....	Ashmore Tp.
Leitch Gold Mines Ltd.....	Beardmore.....	Summers Tp.
Little Long Lac Gold Mines Ltd.....	Room 3100, 25 King St. W., Toronto.....	Ashmore Tp.
MacLeod-Cockshutt Gold Mines Ltd.....	357 Bay St., Toronto.....	Geraldton
Magnet Consolidated Mines Ltd.....	515 Jarvis St., Toronto.....	Geraldton
Maylac Gold Mines.....	Room 504, 357 Bay St., Toronto.....	Geraldton
Ouilette Mines Ltd.....	Room 1109, 330 Bay St., Toronto.....	Savant Lake
Talmora Long Lac Gold Mines Ltd.....	Room 205, 217 Bay St., Toronto.....	Little Long Lac
Theresa Gold Mines Ltd.....	Long Lac.....	Long Lac
Thunderhead Gold Mines Ltd.....	80 Richmond St. W., Toronto.....	Port Arthur
Undersill Gold Mining Co. Ltd.....	Room 1721, 25 King St. W., Toronto.....	Beardmore
<i>Kenora Area—</i>		
Andowan Mines Ltd.....	Kashabowie.....	Shebandowan Lake
Jack Lake Mines Ltd.....	190A Adelaide St., Toronto.....	McCauley Tp.
Kenwest Mines Ltd.....	Room 27, 10 Adelaide St. E., Toronto.....	Goldrock
Van Houten Gold Mines Ltd.....	171 Yonge St., Toronto.....	Dymont
Lunward Gold Mines.....	217 Bay St., Toronto.....	Echo Tp.
<i>Patricia District—</i>		
Advance Red Lake Gold Mines Ltd.....	Room 701, 347 Bay St., Toronto.....	Red Lake
Aiken Red Lake Gold Mines Ltd.....	Room 303, 53 Yonge St., Toronto.....	Red Lake
Alexander Red Lake Mines Ltd.....	515 Jarvis St., Toronto.....	McKenzie Island
Batori Mines Ltd.....	Suite 311, 21 King St. E., Toronto.....	Connaught Tp.
Blanchard Gold Mines Ltd.....	Room 318, 371 Bay St., Toronto.....	Todd Tp.
Bayview Red Lake Gold Mines Ltd.....	80 Richmond St. W., Toronto.....	Todd Tp.
Berens River Mines Ltd.....	Favourable Lake.....	Favourable Lake
Bright Red Lake Mines Ltd.....	Room 311, 21 King St. E., Toronto.....	Fairlie Tp.
Buffalo Red Lake Mines Ltd.....	Room 1701, 372 Bay St., Toronto.....	Red Lake
Campbell Red Lake Mines Ltd.....	Room 620, Confederation Building, Toronto.....	Red Lake
Carrioma Gold Mines Ltd.....	Room 305, 300 Bay St., Toronto.....	Heyson Tp.
Central Patricia Gold Mines Ltd.....	Central Patricia.....	Central Patricia
Cochenour Willans Gold Mines Ltd.....	801 Dominion Bank Building, Toronto.....	McKenzie Island
Craibbe-Fletcher Gold Mines Ltd.....	Suite 1, 26-28 Adelaide St. W., Toronto.....	Dome Tp.
Crowshore Patricia Gold Mines Ltd.....	171 Yonge St., Toronto.....	Crow River
Detta Red Lake Mines Ltd.....	200 Bay St., Toronto.....	Balmer Tp.
Dorion Red Lake Mines Ltd.....	200 Bay St., Toronto.....	Balmer Tp.
Duluth Red Lake Gold Mines Ltd.....	200 Bay St., Toronto.....	Balmer Tp.
Dexter Red Lake Gold Mines Ltd.....	Room 620, 12 Richmond St. E., Toronto.....	Red Lake
Dickinson Red Lake Mines Ltd.....	200 Bay St., Toronto.....	Balmer Tp.
Frond Lake Mining Co. Ltd.....	85 Richmond St. W., Toronto.....	Fort Hope
Halden Red Lake Gold Mines Ltd.....	36 Toronto St., Toronto.....	Heyson Tp.
Hasaga Gold Mines Ltd.....	Red Lake.....	Heyson Tp.
Jason Mines Ltd.....	510 Stock Exchange Building, Vancouver, British Columbia.....	Casummit Lake
Lassie Red Lake Gold Mines Ltd.....	12 Richmond St. E., Toronto.....	Red Lake
Lingnora Gold Mines Ltd.....	19 Richmond St. W., Toronto.....	Lingman Lake
Lingman Lake Gold Mines Ltd.....	707 McArthur Building, Winnipeg, Manitoba.....	Lingman Lake
Madsen Red Lake Gold Mines Ltd.....	67 Yonge St., Toronto.....	Heyson Tp.
McKenzie Red Lake Gold Mines Ltd.....	19 Richmond St. W., Toronto.....	Dome Tp.
Pickle Crow Gold Mines Ltd.....	Pickle Crow.....	Pickle Crow
Martin-McNeely Mines Ltd.....	24 Fraser St., North Bay.....	Dome Tp.
McFinley Red Lake Gold Mines Ltd.....	100 Adelaide St., Toronto.....	Bateman Tp.
McMarnac Red Lake Gold Mines Ltd.....	Room 402, 19 Richmond St. W., Toronto.....	Dome Tp.
Mink Gold Mines Ltd.....	Room 504, 357 Bay St., Toronto.....	Mink Lake
Orlac Red Lake Mines.....	357 Bay St., Toronto.....	Red Lake
Red Area Gold Mines Ltd.....	80 Richmond St. W., Toronto.....	Fairlie Tp.
Redaurum Red Lake Gold Mines Ltd.....	100 Adelaide St. W., Toronto.....	Baird Tp.
Redwood Gold Mines Ltd.....	Suite 1024, 85 Richmond St. W., Toronto.....	Heyson Tp.
Richmac Gold Mines Ltd.....	Room 1502, 372 Bay St., Toronto.....	Dome Tp.
Russet Red Lake Gold Mines Ltd.....	Room 318, 371 Bay St., Toronto.....	Baird Tp.
San Pedro Mining Corp. Ltd.....	630 Confederation Life Building, Toronto.....	Heyson Tp.
Slate Bay Gold Mines Ltd.....	Room 318, 371 Bay St., Toronto.....	McDonough Tp.
Spruce Lake Gold Mines Ltd.....	Suite 1007, 67 Yonge St., Toronto.....	Heyson Tp.
Starratt Olsen Gold Mines Ltd.....	Red Lake.....	Baird Tp.
Virginia Red Lake Mines Ltd.....	Suite 1, 26-28 Adelaide St. W., Toronto.....	Balmer Tp.
MANITOBA—		
Callinan Flin Flon Mines Ltd.....	Room 612, 371 Bay St., Toronto, Ont.....	Flin Flon
Century Mining Corp. Ltd.....	57 St. James St. W., Montreal, Quebec.....	Elbow Lake
Creole Snow Lake Mines Ltd.....	34 Adelaide St. W., Toronto, Ont.....	Herb Lake
Frebert Snow Lake Mines Ltd.....	85 Richmond St. W., Toronto, Ont.....	Herb Lake
Gold Pan Mines (1945) Ltd.....	818 Somerset Building, Winnipeg.....	Bisset

DIRECTORY OF FIRMS—Continued

Active Operators in the Canadian Auriferous Quartz Mining Industry—Continued

Name	Head or Executive Office Address	Location
MANITOBA—Concluded		
Howe Sound Exploration Co. Ltd.	Britannia Beach, British Columbia	Snow Lake
Ken-Bay Gold Mines Ltd.	320 Bay St., Toronto, Ont.	Little Stull Lake
Kiwago Gold Mines Ltd.	Electric Railway Chambers, Winnipeg.	Rice Lake
New Manitoba Gold Mines Ltd.	710, 80 King St. W., Toronto, Ont.	Rice Lake
Northern Canada Mines Ltd.	44 Victoria St., Toronto, Ont.	Snow Lake
San Antonio Gold Mines Ltd.	237 Curry Building, Winnipeg	Bissett
Sangold Mines Ltd.	67 Yonge St., Toronto, Ont.	Rice Lake
Tartan Lake Gold Mines Ltd.	330 Bay St., Toronto, Ont.	Athapapukow
Wekusko Consolidated Ltd.	395 Main St., Winnipeg	Herb Lake
SASKATCHEWAN—		
Nesnah Mining & Exploration Co. Ltd.	320 Bay St., Toronto, Ont.	Beaver Lake
Newcor Mining & Refining Ltd.	67 Yonge St., Toronto, Ont.	Douglas Lake
NORTHWEST TERRITORIES—		
Akaiteho Yellowknife Gold Mines Ltd.	2810, 25 King St. W., Toronto, Ont.	Yellowknife
Alcan Yellowknife Gold Mines Ltd.	67 Yonge St., Toronto, Ont.	Yellowknife
American Yellowknife Gold Mines Ltd.	171 Yonge St., Toronto, Ont.	Yellowknife
Amy Yellowknife Mines Ltd.	515 Jarvis St., Toronto, Ont.	Yellowknife
Athona Mines (1937) Ltd.	171 Yonge St., Toronto, Ont.	Yellowknife
Atlas Yellowknife Mines Ltd.	330 Bay St., Toronto, Ontario	Yellowknife
Bear Exploration and Radium Ltd.	7 Adelaide St. E., Toronto, Ont.	Yellowknife
Bryhern Exploration Development & Mining Ltd.	100 Adelaide St. W., Toronto, Ont.	Yellowknife
Cassidy Yellowknife Mines Ltd.	36 Toronto St., Toronto, Ont.	Yellowknife
The Consolidated Mining & Smelting Co. of Canada Ltd.	Trail, British Columbia	Yellowknife
Conwest Exploration Co. Ltd.	Spencerville, Ont.	Yellowknife
Discovery Yellowknife Mines Ltd.	171 Yonge St., Toronto, Ont.	Yellowknife
Drake Yellowknife Gold Mines Ltd.	67 Yonge St., Toronto, Ont.	Yellowknife
Echo-Indin Mines Ltd.	515 Jarvis St., Toronto, Ont.	Yellowknife
Frederick Mining & Development Ltd.	100 Adelaide St. W., Toronto, Ont.	Yellowknife
Frobisher Ltd.	25 King St. W., Toronto 1, Ontario	Yellowknife
Giant Yellowknife Gold Mines Ltd.	25 King St. W., Toronto, Ont.	Yellowknife
Goldcrest Mines Ltd.	171 Yonge St., Toronto, Ont.	Indin Lake
Greenlee Mines Ltd.	171 Yonge St., Toronto, Ont.	Yellowknife
Homer Yellowknife Mines Ltd.	330 Bay St., Toronto, Ont.	Yellowknife
Huhill Yellowknife Mines Ltd.	21 King St. E., Toronto, Ont.	Yellowknife
Ingray Yellowknife Mines Ltd.	55 York St., Toronto, Ont.	Yellowknife
Jackknife Gold Mines Ltd.	330 Bay St., Toronto, Ont.	Yellowknife
Jeph Yellowknife Gold Mines Ltd.	67 Yonge St., Toronto, Ont.	Yellowknife
Larder "U" Island Mines Ltd.	330 Bay St., Toronto, Ont.	Yellowknife
Leta Explorations Ltd.	67 Yonge St., Toronto, Ont.	Yellowknife
Lexindin Gold Mines Ltd.	67 Yonge St., Toronto, Ont.	Indin Lake
Lodester Yellowknife Gold Mines Ltd.	9 Toronto St., Toronto, Ont.	Yellowknife
Lynx Yellowknife Gold Mines Ltd.	25 King St. W., Toronto, Ont.	Yellowknife
Massive Yellowknife Mines Ltd.	36 Toronto St., Toronto, Ont.	Yellowknife
Negus Mines Ltd.	410 Royal Bank Building, Toronto, Ont.	Yellowknife
Nrb Yellowknife Mines Ltd.	36 Toronto St., Toronto, Ont.	Yellowknife
N.W.T. Gold Ltd.	208 Bank of Nova Scotia Building, Edmonton, Alberta.	Yellowknife
Partridge Yellowknife Mines Ltd.	38 King St. W., Toronto, Ont.	Yellowknife
Prow Yellowknife Gold Mines Ltd.	25 King St. W., Toronto, Ont.	Yellowknife
Quebec Yellowknife Gold Mines Ltd.	132 St. James St. W., Montreal, Quebec	Yellowknife
Ouest Yellowknife Mines Ltd. (N.P.L.)	85 Richmond St. W., Toronto, Ont.	Yellowknife
Overseign Yellowknife Mines Ltd.	302 Bay St., Toronto, Ont.	Johnston Lake
Sunset Yellowknife Mines Ltd.	67 Yonge St., Toronto, Ont.	Yellowknife
Trans-American Mining Corp. Ltd.	55 York St., Toronto, Ont.	Yellowknife
Vesta Yellowknife Mines Ltd.	67 Yonge St., Toronto, Ont.	Yellowknife
Yellorex Mines Ltd.	330 Bay St., Toronto, Ont.	Yellowknife
BRITISH COLUMBIA—		
Arlington Mine Leases.	Salmo	Erie
Bayonne Consolidated Mines Ltd.	475 Howe St., Vancouver	Nelson
Bralorne Mines Ltd.	555 Burrard St., Vancouver	Bralorne
Bridge River Consolidated Mines Ltd.	475 Howe St., Vancouver	Goldbridge
B.R.X. (1935) Consolidated Mines Ltd. (N.P.L.)	475 Howe St., Vancouver	Shalath
Bristol Mines (1946) Ltd.	572 Howe St., Vancouver	Minto Mines
Canusa Cariboo Gold Mines Ltd. (N.P.L.)	789 W. Pender St., Vancouver	Barkerville
Canyon Cariboo Gold Mines Ltd. (N.P.L.)	789 W. Pender St., Vancouver	Cariboo
Cariboo Mine	Rock Creek	Greenwood
Cariboo Gold Quartz Mining Co. Ltd.	1007 Royal Bank Building, 675 W. Hastings St., Vancouver	Wells
Conwest Exploration Co. Ltd.	401 Rogers Building, Vancouver	Slocan
Dentonia Mines Ltd.	572 Howe St., Vancouver	Greenwood
Fairview Mining Co. Ltd.	626 Pender St., Vancouver	Fairview

DIRECTORY OF FIRMS—Continued

Active Operators in the Canadian Auriferous Quartz Mining Industry—Concluded

Name	Head or Executive Office Address	Location
BRITISH COLUMBIA—Concluded		
Fern Mine Ltd.	Royal Bank Building, Nelson.	Nelson
Gem Gold Mines Ltd.	1604 Royal Building, Vancouver.	Nanaimo
Gold Belt Mining Co. Ltd.	Sheep Creek.	Sheep Creek
Gold Drop Mines Ltd.	Stewart.	Marmot River
Grull-Wihksne Gold Mines Ltd.	475 Howe St., Vancouver.	Coldbridge
Hedley Amalgamated Gold Mines Ltd. (N.P.L.)	535 Homer St., Vancouver.	Hedley
Hedley Gordon Mines	1935 Haro St., Vancouver.	Hedley
Hedley Mascot Gold Mines Ltd (N.P.L.)	608 Royal Bank Building, Vancouver.	Hedley
Hedley Monarch Gold Mines Ltd.	1155 W. Pender St., Vancouver.	Osoyoos
Hedley Yunnan Gold Mines Ltd.	417 Metropolitan Building, Vancouver.	Osoyoos
Hillstake Mining Co. Ltd.	475 Howe St., Vancouver.	Bridge River
Island Mountain Mines Co. Ltd.	Wells.	Wells
Kelowna Exploration Co. Ltd.	Hedley.	Osoyoos
Kenville Gold Mines Ltd.	184 Bay St., Toronto, Ontario.	Nelson
Midnight Mine.	Box 332, Rossland.	Trail Creek
Morris Summit Gold Mines Ltd.	510 Stock Exchange Building, Vancouver.	Stewart
Pacific (Eastern) Gold Mines Ltd.	184 Bay St., Toronto, Ont.	Pioneer
Pellaire Mines Ltd.	184 Bay St., Toronto, Ont.	Williams Lake
Pinebrayle Gold Mines Ltd.	844 W. Hastings St., Vancouver.	Bralorne
Pioneer Gold Mines of B.C. Ltd.	711 Yorkshire Building, 525 Seymour St., Vancouver.	Lillooet
Polaris Taku Mining Co. Ltd.	1600 Royal Bank Building, Vancouver.	Tulsequah
Privateer Mine Ltd.	475 Howe St., Vancouver.	Zeballos
Red Hawk Gold Mines Ltd.	808 W. Pender St., Vancouver.	Bridge River
Reno Gold Mines Ltd.	208 Yorkshire Building, Vancouver.	Zeballos
Rusdon Gold Mines Ltd.	475 Howe St., Vancouver.	Clinton
Sheep Creek Gold Mines Ltd.	616 Stock Exchange Building, Vancouver.	Sheep Creek
Silbak Premier Mines Ltd.	626 Pender St. W. Vancouver.	Premier
Sonny Boy Gold Mining Syndicate.	675 Davie St., Vancouver.	Merriitt
Spud Valley Gold Mines Ltd.	703 Royal Trust Building, Vancouver.	Zeballos
Sterna, B.	Nelson.	Ymir
Stewart Canal Gold Mines Ltd.	789 W. Pender St., Vancouver.	Stewart

Principal Canadian Alluvial Gold Operators

BRITISH COLUMBIA—		
Aslin, Alfred.	Burns Lake.	Manson Creek
Anderson, Marius A.	Wells.	Eight Mile Lake
Bride, Maurice.	Atlin.	Spruce Creek
Brister, J. V.	Atlin.	Spruce Creek
Cariboo Keithley Gold Placers Ltd.	812 Standard Building, Vancouver.	Williams Lake
Climba Development Ltd.	410 King St. W., Kitchener, Ontario.	Atlin
Edwardson, Mark.	Atlin.	Atlin
Fry, Thomas.	Quesnel.	Cariboo
Gaensbauer, G.	Atlin.	McKee Creek
Goldsmith, McGregor & Dernham.	Keithley Creek.	Keithley Creek
Gunn, J. J.	Wells.	Wells
Harvey Creek Mines Ltd.	555 Burrard St., Vancouver.	Keithley Creek
Hasbrouck, W.	Keithley Creek.	Keithley Creek
Holm, O.	Barkerville.	Barkerville
Hougen, Dr. O. R.	601 Birks Building, Vancouver.	Cariboo
Ivanic, Steve & Co.	Atlin.	Spruce Creek
Johnson, K.	Atlin.	Wright Creek
Johnson, P., and K. Kuhn.	Harris Creek.	Harris Creek
Johnson & Hill.	Atlin.	Atlin
Ketch Placers.	Wells.	Wells
Loper & Sons.	Germansen Landing.	Germansen Landing
Lowhee Mining Co. Ltd.	605 Tacoma Building, Tacoma 2, Washington, U.S.A.	Barkerville
McKinnon, Chas.	Atlin.	Atlin
Moose Flat Placers Ltd.	Prince George.	Prince George
Noland, John.	Atlin.	Atlin
Northern Resources Ltd.	475 Howe St., Vancouver.	Atlin
Piccolo, Louis.	Atlin.	McKee Creek
Rask, Eric.	Wells.	Cariboo
Reid, James A.	Salmon Arm.	Revelstoke.
Risberg, Carl.	Barkerville.	Cariboo
Savery, W. H.	Wells.	Cariboo
Swanson & Watt.	Atlin.	McKee Creek
Swift River Dredging Co. Ltd.	Quesnel.	Cariboo
Taylor, Roy.	Wells.	Barkerville
Watson, James.	Massett.	Graham Island
Wheaton Creek Co-operative Mine.	1426 11th Ave. W., Seattle 9, Washington, U.S.A.	Boulder Creek
Wickstrom, Sunde & Nelson.	Atlin.	Atlin
Youngash, R. W., & Associates.	2280 Burrard St., Vancouver.	Snowshoe Creek

DOMINION BUREAU OF STATISTICS

DIRECTORY OF FIRMS—Continued

Principal Canadian Alluvial Gold Operators—Concluded

Name	Head or Executive Office Address	Location
YUKON—		
Burwash Mining Co. Ltd.	Whitehorse.....	Burwash Creek
Clear Creek Placers Ltd.	4556 University Way, Seattle, Washington, U.S.A.	Clear Creek
The Yukon Consolidated Gold Corp. Ltd.	1919 Marine Building, Vancouver, British Columbia.	Various

Operators in Canadian Copper-Gold-Silver Mining Industry

QUEBEC—		
Allore Rouyn Metals Corp. Ltd.	80 Richmond St. W., Toronto, Ont.	Destor Tp.
Continental Copper Mines Ltd.	67 Yonge St., Toronto, Ont.	Dufresnoy Tp.
Copper-Hill Mining Co. Ltd.	100 Adelaide St. W., Toronto, Ont.	Dufresnoy Tp.
Despina Gold Mines Ltd.	79 Wall St., New York, N.Y., U.S.A.	Rouyn Tp.
East Sullivan Mines Ltd.	1604 Aldred Building, Montreal.	Bourlamaque
Gan Copper Mines Ltd.	293 Bay St., Toronto, Ont.	Beauchastel Tp.
Horne Fault Mines Ltd.	Duparquet.	Beauchastel Tp.
Joliet-Quebec Mines Ltd.	2810, 25 King St. W., Toronto, Ont.	Rouyn Tp.
Lake Dufault Mines Ltd.	Duparquet.	Dufresnoy Tp.
Lake Macamic Mines Ltd.	2 Hughson St., Hamilton, Ont.	La Sarre
MacDonald Mines Ltd.	1085 Beaver Hall Hill, Montreal.	Dufresnoy Tp.
Noranda Mines Ltd.	1600 Royal Bank Building, Toronto, Ont.	Noranda
Normetal Mining Corp. Ltd.	Suite 602, 350 Bay St., Toronto, Ont.	Dezmelozes Tp.
Obalski (1945) Ltd.	411 Canada Cement Building, Montreal.	Chibougamau Tp.
Osisko Lake Mines Ltd.	2810, 20 King St. W., Toronto, Ont.	Rouyn Tp.
Quebec Manitou Mines Ltd.	78 Sparks St., Ottawa, Ont.	Abitibi
Quemont Mining Corp. Ltd.	Suite 602, 350 Bay St., Toronto, Ont.	Rouyn Tp.
Stannac Ltd.	2810, 25 King St. W., Toronto, Ont.	Langue doc Tp.
Waite-Amulet Mines Ltd.	1600 Royal Bank Building, Toronto, Ont.	Duprat Tp.
Zoneore Rouyn Mines Ltd.	414 Bay St., Toronto, Ont.	Montbeillard Tp.
MANITOBA—		
Callinan Flin Flon.	371 Bay St., Toronto, Ont.	Flin Flon
Cuprus Mines Ltd.	500 Royal Bank Building, Winnipeg.	S.E. Flin Flon
Hudson Bay Mining & Smelting Co. Ltd.	500 Royal Bank Building, Winnipeg.	Flin Flon
Sherritt-Gordon Mines Ltd.	25 King St. W., Toronto, Ont.	Sherridon
SASKATCHEWAN—		
Hudson Bay Mining & Smelting Co. Ltd.	500 Royal Bank Building, Winnipeg, Man.	Flin Flon
BRITISH COLUMBIA—		
Britannia Mining & Smelting Co. Ltd.	Britannia Beach.	Britannia Beach
Granby Consolidated Mining, Smelting & Power Co. Ltd.	675 W. Hastings St., Vancouver.	Similkameen
Twin "J" Mines Ltd.	Box 1058, Duncan.	Victoria
Vananda Mining Co. Ltd.	711 Yorkshire Building, Vancouver.	Nanaimo

Operators in the Silver-Cobalt Mining Industry

(x) Active but no shipments made.

Name of Operator	Head Office Address	Location of Mine
ONTARIO—		
Ausie Mining & Reduction Co. Ltd.	Box 643, Cobalt.	Coleman Tp.
Casey Operation, The.	Box 450, Cobalt.	Casey Tp.
Comet Leasing Co.	Box 274, Cobalt.	Coleman Tp.
Conisil Mines Ltd. (x)	320 Bay St., Toronto.	Cobalt
Cross Lake Lease (O'Brien)	Box 390, Cobalt.	Coleman Tp.
Mayfair Mines Ltd. (x)	156 Yonge St., Toronto.	Coleman Tp.
Nipissing Mining Co. Ltd., The (x)	302 Bay St., Toronto.	Cobalt
Silanco Mining & Refining Co. Ltd.	7 Prospect Ave., Cobalt.	Cobalt
Silco Mines Ltd.	67 Yonge St., Toronto.	Gillies
Silver Arrow Mines Ltd.	85 Richmond St. W., Toronto.	S. Lorrain
Siscoe Metals Ltd.	907 Dominion Sq. Bldg., Montreal, Quebec.	Haultain Tp.

NOTE.—In addition to the names listed, there were some small shippers.

DIRECTORY OF FIRMS—Continued

Principal Operators in the Silver-Lead-Zinc Mining Industry

(x) Active but not producing.

Name of Operator	Head Office Address	Location of Mine
QUEREC—		
Candego Mines Ltd. (x).....	1085 Beaver Hall Hill, Montreal.....	Gaspe
Cameron, F. C. (x).....	250 Park Ave., New York, N.Y., USA.....	Sherbrooke.
Federal Zinc & Lead Co. Ltd. (x).....	708 Drummond Bldg., Montreal.....	Lemieux Tp.
Golden Manitou Mines Ltd.....	Room 1104, 30 Bay St., Toronto, Ont.....	Boulamaque Tp.
Gulf Lead Mines Ltd. (x).....	330 Bay St., Toronto, Ontario.....	Hudson Bay
Lyall and Beidelman (x).....	1117 St. Catherine St. W., Montreal.....	Gaspe
Mistassini Explorations Ltd. (x).....	184 Bay St., Toronto, Ont.....	Mistassini
Norzone-Rouyn Mines Ltd. (x).....	67 Yonge St., Toronto, Ont.....	Montbeillard Tp.
Shawinigan Mining & Smelting Co. Ltd. (x).....	740A de l'Eppe Ave., Outremont, Montreal.....	Portneuf Co.
BRITISH COLUMBIA—		
Ainsmore Consolidated Mines Ltd.....	Ainsworth.....	Ainsworth
Base Metals Mining Corp. Ltd.....	350 Bay St., Toronto, Ont.....	Field
Big Four Silver Mines Ltd. (x).....	302 Royal Bank Bldg., Vancouver.....	Stewart
Cansil Consolidated Mines Ltd. (x).....	711 Credit Foncier Bldg., Vancouver.....	Ferguson
Consolidated Mining & Smelting Co. of Canada Ltd.....	Trail.....	Kimberley
Doney, Ernest (Victor).....	Box 414, New Denver.....	Slocan, M.D.
Esperanza Mines Ltd. (x).....	650 Columbia St., New Westminster.....	Portland Canal
Highland Silver Mines Ltd. (x).....	404 Rogers Bldg., Vancouver.....	Beaverdell
Highland-Bell Ltd.....	844 West Hastings St., Vancouver.....	Beaverdell
International Mining Corp. (Canada) Ltd. (x).....	85 Richmond St. W., Toronto, Ontario.....	Kootenay
Esposito, V.....	Salmo.....	Ainsworth
Ottawa Mining & Milling Co.....	Empire State Bldg., Spokane, Wash., U.S.A.....	Slocan
Santiago Mines Ltd.....	423 Hamilton St., Vancouver.....	New Denver
Sheep Creek Gold Mines Ltd.....	616 Stock Exchange, Vancouver.....	Zincton
Silver Ridge Mining Co. Ltd. (x).....	Sandon.....	Slocan
Sylvester Mines Ltd. (x).....	1155 West Pender St., Vancouver.....	Sandon
Torbritt Silver Mines (x).....	350 Bay St., Toronto, Ont.....	Alice Arm
Union Mine.....	Rosslund.....	Rosslund
Utica Mines (1937) Ltd. (x).....	475 Howe St., Vancouver.....	Kaslo
Western Exploration Co. Ltd.....	Silverton.....	Silverton

Firms in the Miscellaneous Metal Mining Industry in Canada

NOTE.—(x) Active but not producing.

Name of Firm	Head Office Address	Location of Canadian Plant
ONTARIO—		
Falconbridge Nickel Mines, Ltd.....	304 Bay St., Toronto.....	Falconbridge Tp.
International Nickel Company of Canada, Limited.....	Copper Cliff.....	Mines: Tps. of Levack, Snider, McKim and Garson Smelters: Copper Cliff and Coniston Nickel refinery: Port Colborne Copper refinery: Copper Cliff
Nickel Offsets Ltd. (x).....	Room 1701—372 Bay St., Toronto.....	Foy Tp.
North Range Nickel Mines Ltd. (x).....	Suite 501—67 Yonge St., Toronto.....	Bowell Tp.
Ontario Nickel Mines Ltd. (x).....	Room 305—350 Bay St., Toronto.....	Moose Lake
MANTONA—		
Sherritt-Gordon Mines Ltd. (x).....	25 King St. W., Toronto.....	Lynn Lake

Firms in the Miscellaneous Metal Mining Industry in Canada

(x) Active but not producing.

Name of Firm and Product	Head Office Address	Location of Mine or Plant
Aluminum—		
Aluminum Company of Canada Limited.....	1700 Sun Life Bldg., Montreal, Que.....	Arvida, Que. Shawinigan Falls, Que. La Tuque, Que. Isle Maligne, Que. Beauharnois, Que.
Antimony—		
Consolidated Mining & Smelting Company of Canada Ltd.....	215 St. James St., Montreal, Que.....	Trail, B.C.

DIRECTORY OF FIRMS—Continued

Firms in the Miscellaneous Metal Mining Industry in Canada—Concluded

(x) Active but not producing.

Name of Firm and Product	Head Office Address	Location of Mine or Plant
Beryl— Canadian Beryllium Mines & Alloys Ltd. (x)...	Room 401, 100 Adelaide St. W., Toronto, Ont.	Renfrew County, Ont.
Bismuth— Deloro Smelting & Refining Co. Ltd. (x)..... Consolidated Mining & Smelting Company of Canada Ltd..... Molybdenite Corp. of Canada Ltd.....	900 Victoria Bldg., Ottawa, Ont..... 215 St. James St., Montreal, Que..... 59 St. James St. W., Montreal, Que.....	Deloro, Ont. Trail, B.C. La Corne Tp., Que.
Cadmium— Consolidated Mining & Smelting Company of Canada Ltd..... Hudson Bay Mining & Smelting Co. Ltd. Western Exploration.....	215 St. James St., Montreal, Que..... 500 Royal Bank Bldg., Winnipeg, Man..... Silverton, B.C.	Trail, B.C. Flin Flon, Man. Kaslo, B.C.
Chromite— Chrome Association..... Chromite Ltd. (x)..... Pare, Ore.....	342 Notre Dame St., Black Lake, Que..... 404 Notre Dame St. W., Montreal, Que..... Black Lake, Que.....	Black Lake, Que. Cleveland Twp., Que. Caleraire Twp., Que.
Iron Ore— Hollinger North Shore Exploration Co. Ltd. (x)..... Labrador Mining & Exploration Co. Ltd. (x)..... Algoma Ore Properties Ltd..... Michipicoten Iron Mines Ltd..... Rebair Gold Mines Ltd. (x)..... Steep Rock Iron Mines Ltd..... Tomahawk Iron Mines Ltd. (x)..... Rawn Iron Mines Ltd. (x)..... Kazabazua Hematite Ltd. (x)..... Norancon Exploration (Que.) Ltd. (x)..... Andowan Mines Ltd. (x)..... Lowphos Ore, Ltd. (x)..... Westland Mining Co. Ltd. (x).....	721 Royal Bank Bldg., Montreal, Que..... 721 Royal Bank Bldg., Montreal, Que..... Cornwall Bldg., Sault Ste. Marie, Ont..... 25 King St. W., Toronto, Ont..... 9 Adelaide St. E., Toronto, Ont..... 25 King St. W., Toronto, Ont..... Suite 405, 67 Yonge St., Toronto, Ont..... Atikokan, Ont..... 719 Yonge St., Toronto, Ont..... c/o Noranda Mines Ltd., Noranda, Que..... Kashabowie, Ont..... 1809 Royal Bank Bldg., Toronto, Ont..... 24 King St. W., Toronto, Ont.....	N.E., Quebec, Que. Labrador, Que. Algoma District, Ont. Algoma District, Ont. Atikokan, Ont. Rainy River Dist., Ont. Hastings Co., Ont. Steep Rock Lake, Ont. Kazabazua, Que. New Quebec, Que. Matawin, Ont. Hutton Twp. Ont. Algoma, Ont.
Indium— Consolidated Mining & Smelting Company of Canada Ltd. (x).....	215 St. James St., Montreal, Que.....	Trail, B.C.
Lithium Ore— Hudson Bay Mining & Smelting Co. Ltd. (x)..... Lithium Corporation of Canada Ltd. (x)..... Nepheline Products Ltd. (x)..... Sheritt Gordon Mines Ltd. (x).....	500 Royal Bank Bldg., Winnipeg, Man..... 403 Avenue Bldg., Winnipeg, Man..... 320 Bay St., Toronto, Ont..... 25 King St. W., Toronto, Ont.....	Cat Lake, Man. Bernie and Cat Lakes, Man. La Corne Que. Crowduck Bay, Man. East Bantree, Man.
Magnesium— Consolidated Mining & Smelting Company of Canada Ltd. (x)..... Dominion Magnesium Ltd.....	215 St. James St., Montreal, Que..... Room 1107, 67 Yonge St., Toronto, Ont.....	Trail, B.C. Haley, Ont.
Mercury— Bralorne Mines Ltd. (x)..... Consolidated Mining & Smelting Company of Canada Ltd. (x).....	555 Burrard St., Vancouver, B.C..... 215 St. James St., Montreal, Que.....	Omineca District, B.C. Pinchi Lake, B.C.
Molybdenite— Molybdenite Corp. of Canada Ltd..... Quyong Molybdenite Co. Ltd. (x).....	59 St. James St. W., Montreal, Que..... Quyong, Que.....	La Corne, Que. Quyong, Que.
Selenium-Tellurium— International Nickel Co. of Canada Ltd..... Canadian Copper Refineries Ltd.....	Copper Cliff, Ont..... 1600 Royal Bank Bldg., Toronto, Ont.....	Copper Cliff, Ont. Montreal East, Que.
Thallium— Hudson Bay Mining & Smelting Co. Ltd. (x).....	500 Royal Bank Bldg., Winnipeg, Man.....	Flin Flon, Man.
Tin— Consolidated Mining & Smelting Company of Canada Ltd..... Mountain Crest Mines Ltd. (x).....	215 St. James St., Montreal, Que..... 1445 MacKay St., Montreal, Que.....	Trail, B.C. Charlevoix, Que.
Titanium Ore— Baie St. Paul Titanic Iron Ore Co..... Coulombe, J..... Loughborough Mining Co. Ltd..... O'Brien & Fowler Ltd.....	Baie-Saint-Paul, Que..... 71 Ave. Royal Monument, Quebec, Que..... Sydenham, Ont..... Buckingham, Que.....	St. Urbain, Que. St. Urbain, Que. St. Urbain, Que. St. Urbain, Que.
Tungsten Concentrates— Hollinger Cons. Gold Mines Ltd. (x)..... Wartime Metals Corp. (Emerald Tungsten Project) (x).....	Timmins, Ont..... 637 Craig St. W., Montreal, Que.....	Timmins, Ont. Salmo, B.C.

DIRECTORY OF FIRMS—Continued

Firms in the Non-Ferrous Smelting and Refining Industry

Name of Firm	Head or Executive Office Address	Location of Plant
Quebec—		
Aluminum Company of Canada Ltd.....	1700 Sun Life Bldg., Montreal.....	Arvida, La Tuque Shawini- gan Falls, Isle Maligne, Beauharnois
Canadian Copper Refineries Ltd.....	1600 Royal Bank Bldg., Toronto, Ont.....	Montreal East
Noranda Mines Ltd.....	1600 Royal Bank Bldg., Toronto, Ont.....	Noranda
Ontario—		
Deloro Smelting & Refining Co. Ltd.....	Deloro.....	Deloro
Dominion Magnesium Ltd.....	67 Yonge St., Toronto.....	Haley
Eldorado Mining and Refining.....		Port Hope
Falconbridge Nickel Mines Ltd.....	304 Bay St., Toronto.....	Falconbridge
International Nickel Co. of Canada Ltd.....	Copper Cliff.....	Copper Cliff, Coniston, Port Colborne
Manitoba—		
Hudson Bay Mining and Smelting Co. Ltd...	500 Royal Bank Bldg., Winnipeg.....	Flin Flon
British Columbia—		
Consolidated Mining & Smelting Co. of Can- ada Limited.....	Trail.....	Trail

NON-METAL MINING INDUSTRIES, INCLUDING FUELS

FUELS

DIRECTORY OF FIRMS—Continued

Coal Mining Industry

Operator	Head office	Mine location and mine office
NOVA SCOTIA—		
Bras d'Or Coal Co., Ltd.....	Bras d'Or.....	Cape Breton Co., Bras d'Or Cape Breton Co., Bras d'Or, ¼ mi. N. of Cape Breton Co.
Dominion Coal Co., Ltd.....	Sydney.....	Glacé Bay, O'Neil Point Glacé Bay, New Aberdeen Glacé Bay, Caledonia Glacé Bay, Passchendale New Waterford New Waterford, 1 mi. W. of Glacé Bay, New Aberdeen Glacé Bay, Caledonia Gardiner Glacé Bay, O'Neil Point
Indian Cove Coal Co., Ltd.....	Sydney Mines, Drawer P.....	Cape Breton Co., Sydney Mines, S. side Cape Breton Co., Sydney Mines, W. of
Old Sydney Collieries, Ltd.....	Sydney Mines.....	Cape Breton Co., Sydney Mines, Cranberry Head Cape Breton Co., Florence 2 mi. NW. of Sydney Mines Inverness Co., Inverness Inverness Co., Port Hood
Campbell & Son, A. J.....	Inverness.....	
Chestico Coal Co. (McDonald, McIsaac & Jones)	Port Hood, Box 26.....	
Evans, Dean.....	Chimney Corner.....	Inverness Co., St. Rose
Inverness Coal Mine.....	Inverness.....	Inverness Co., Inverness
Margaree Steamship Co., Ltd.....	Inverness (Sydney).....	Inverness Co., Inverness
MacLellan, John A.....	Inverness, Box 223.....	Inverness Co., Inverness
Cumberland Ry. & Coal Co.....	Springhill.....	Cumberland Co.
Hillcrest Mining Co., Ltd.....	River Hebert.....	Cumberland Co., Springhill Cumberland Co., Springhill Cumberland Co., Springhill Cumberland Co., River Hebert
Joggins Coal Co., Ltd.....	Amherst, 50 Church St.....	Cumberland Co., Joggins, 1 mi. N. of Cumberland Co., River Hebert
Riverside Coal Co. (Deal, Merson & Darling)	Fairview.....	Cumberland Co., River Hebert
Standard Coal Co., Ltd.....	Amherst, 50 Church St.....	Cumberland Co., River Hebert, E. of river
Acadia Coal Co., Ltd.....	Stellarton.....	Pictou Co., Stellarton, W. side of Pictou Co., Stellarton, N. side of Pictou Co., Stellarton, W. of Albion mine Pictou Co., Thorburn Pictou Co., Coalburn Pictou Co., Westville, S. and N. sides Pictou Co., Westville Pictou Co., Westville
Greenwood Coal Co., Ltd.....	New Glasgow.....	
Intercolonial Coal Co., Ltd.....	Westville.....	
Wadden, W. H.....	Westville, P.O. Box 585.....	
NEW BRUNSWICK—		
Avon Coal Co., Ltd.....	Saint John, Box 940.....	(Minto, South of, near Rothwell xMinto, South of, near Rothwell Minto, 2½ mi. E. of, on lake road Rothwell South
Crawford, E. S. & Sons.....	Newcastle Creek.....	
Evans, W. B.....	Rothwell.....	
(Rothwell Coal Co., Ltd., Lessee)		
Fearon, Bertram.....	Beersville.....	Beersville, on Coal Branch river
Fitton, James.....	Minto.....	New Zion, 7 mi. S.W. of Minto
Flower, James I., for B. B. Flower.....	Minto, R.R. 2.....	Flower Cove, 4 mi. S. of Minto on lake road Coal Creek, South of
General Contractors.....	Chipman.....	Beersville, on Coal Branch River, S. side of, at Big Brook Fork
Girvan, H. H.....	Jailletville.....	

DIRECTORY OF FIRMS—Continued

Coal Mining Industry—Continued

Operator	Head office	Mine location and mine office
NEW BRUNSWICK—Concluded		
Glencross, Wm. Irving.....	Beersville.....	Beersville, on Coal Branch River
Horgan, Frank J., Contractor.....	Chipman.....	Long Creek
King, Gerald H.....	Chipman.....	Chipman, 4 mi. S. of (Coal Creek)
MacDonald, John F. (<i>Operator for Rothwell Coal Co.</i>).....	Minto, R.R. 2.....	Newcastle Creek on lake road; 2½ mi. E. of Minto
McMann, Hugh H.....	Newcastle Creek.....	Newcastle Creek, Block 2½ mi. E. of Minto on lake road
Miramichi Lumber Co., Ltd.....	Minto.....	North and South of Minto Minto
Mitchell, Parker M.....	Water St., W. St. John.....	Chipman
Newcastle Coal Co.....	Minto, Box 291.....	Newcastle Bridge, S. of C.P. Ry.
(A. D. Taylor, <i>Lessee</i>)	Beersville.....	Beersville, on Coal Branch River, W. side of
Reid, Thos.....	Minto.....	Minto
Sullivan, Robt. H.....	Minto.....	Minto
(for Miramichi Lumber Co.)	Minto.....	Minto
Welton & Henderson, Ltd.....	Newcastle Creek.....	Minto, 8 mi. S.E. of
Wasson, A. W.....	Newcastle Bridge.....	Minto, 1½ mi. S.E. of
(A. G. Woodcock, <i>Lessee</i>)		
Yeamans, Roy.....		
ONTARIO—		
Ontario Department of Mines.....	Toronto 2, Parliament Bldgs.....	Onakawana, a station on the T. & N.O. Ry., 126 miles N. of Cochrane (West side of Abitibi River)
(H. C. Rickaby, Deputy Minister)		

SASKATCHEWAN

SOURIS AREA

Operator	Head office	Mine location			Mine office		
		Section	Tp. R. W.				
		Part	L. S. No.				
Banks, Harry.....	Bienfait, Box 137.....		31	1	6	2	Bienfait
Coates & Kingdon.....	Bienfait.....	F. N ½	19	2	6	2	Bienfait
xEastern Collieries of Bienfait, Ltd.....	Estevan, Box 359.....	FL	13	2	7	2	Bienfait
Havanah Collieries, Ltd.....	Estevan.....	10, 14	14	2	7	2	Bienfait
xManitoba & Saskatchewan Coal Co.....	Winnipeg, 503 Avenue Bldg.....	½	10	2	6	2	Bienfait
North West Coal Co.....	Bienfait.....	xx	2	2	6	2	Bienfait
(A. Konapaki, <i>Operator</i>)		NW	10	2	7	2	Bienfait
*Reidel Bros, Coal Mine, <i>Lessees</i>	Estevan, Box 336.....	11, 14	22	2	7	2	Bienfait
South Cambrian, Ltd.....	Pinto.....	8	35	1	6	2	Pinto
Uhrich, Mrs. E., & Hugh Banks.....	Pinto.....	14	35	1	6	2	Pinto
xWestern Dominion Coal Mines, Ltd.††.....	Taylorton.....		5	2	6	2	Taylorton
		xx	8				
			5	2	6	2	Taylorton
			4, 8				
Wheeler & Enmark.....	Bienfait.....		19	2	6	2	Bienfait
*Andersen, Niels.....	Estevan, Box 59.....	12, 13	28	1	8	2	Estevan
Bourquin & Sons, Geo.....	Estevan.....	1, 2, 3	11	2	8	2	Estevan
Bourquin & Sons, L. E.....	Estevan, Box 287.....	9, 10	12	2	8	2	Estevan
†Flower Bros, <i>Lessees</i>	Estevan, Box 501.....	FL	3	4	2	8	Estevan
High Grade Mine.....	Estevan, Box 167.....		33	1	8	2	Estevan
(John Olshanoski & S. Betland, <i>Lessees</i>)							
Jenish Bros. (Joe. & Eng).....	Estevan, Box 510.....	10	1	2	8	2	Estevan
Nicholson Coal Mine.....	Estevan.....	16	2	2	8	2	Estevan
(S. Osjust, <i>Operator</i>)							
Tajc, Ed., & P. H. Frank.....	Estevan.....	1, 2	32	1	8	2	Estevan
Tisdale, A. E.....	Estevan.....	13	33	1	8	2	Estevan
xRoche Percée Coal Mining Co., Ltd.....	Roche Percée.....		26	1	7	2	Roche Percée

BENGOUGH, WILLOW BUNCH AND WOOD MOUNTAIN AREAS

*Beahm, Geo. R.....	Minton.....	SE.	17	3	21	2	Minton
Berge, J. Telford.....	Buffalo Gap.....		5 30	2	25	2	Buffalo Gap
Brown, Alton G.....	Wideview.....	SE. 9 NE. 8	18	3	8	3	Wideview
Caplette, J. E.....	St. Victor.....	N. ½	13 2	6	30	2	St. Victor
Coronach Coal Mine.....	Coronach.....		5, 6 11	2	27	2	Coronach
(Jos. Brandiez, Operator)							

DIRECTORY OF FIRMS—Continued

Coal Mining Industry—Continued

SASKATCHEWAN—Concluded

BENGOUGH, WILLOW BUNCH AND WOOD MOUNTAIN AREAS—Concluded

Operator	Head office	Mine location			Mine office
		Section	Tp.	R. W.	
		Part L. S. No.			
Culbert, W.....	Minton.....	10, 15 26	3	20 2	Minton
Desjardins, Fred.....	Willow Bunch.....	15 13	5	28 2	Willow Bunch
Dumais, O., <i>Lessee</i>	Willow Bunch.....	3 24	4	27 2	Willow Bunch
Eidsness, E., <i>Lessee</i>	Minton.....	9, 10 4	1	21 2	Minton
Fair, James F.....	Hartree.....	6, 11 32	3	26 2	Hartree
Finnberg, Nils.....	Fir Mountain.....	$\left\{ \begin{array}{l} 13 \ 7 \\ 4 \ 18 \\ 16 \ 12 \\ (1 \ 13) \end{array} \right.$	4	4 3	Fir Mountain
Fister, Jesse J.....	Big Beaver.....	11 30	1	23 2	Big Beaver
Fontaine, E.....	St. Victor.....	10, 15 33	5	29 2	St. Victor
Garraway, A. J.....	Fife Lake.....	(13, 16) (31, 32)	1	28 2	Fife Lake
Hedin, M. & Seida, J.....	Assiniboia.....	3,4,5,6,12 10	7	30 2	Assiniboia
Lacerte, J., & J. B. Short.....	Scout Lake.....	12 13	5	30 2	Scout Lake
Lapointe, Louis.....	Buffalo Gap.....	6 29	2	25 2	Buffalo Gap
Leatherdale, Don.....	Gladmar.....	1, 2, 8 11	3	19 2	Gladmar
Lebeck, Anton.....	Buffalo Gap.....	9 30	2	25 2	Buffalo Gap
xLee, Magnus, <i>Operator</i>	Big Beaver.....	7 13	2	22 2	Big Beaver
*McGillis, Wilf.....	Willow Bunch.....	5 14	5	28 2	Willow Bunch
Mattson, Geo. and Wagner.....	Bengough.....	14, 15 9 2 16	5	22 2	Bengough
Morrow, G. R.....	Big Beaver.....	1, 2, 8 11	2	23 2	Big Beaver
*Ott, Mrs. H. (Flora) (Louis Guse, <i>Operator</i>)	Bengough.....	9 3	4	23 2	Bengough
Pohl, Henry.....	Buffalo Gap.....	E. $\frac{1}{2}$ 12 2	3	25 2	Gallocks
Porter, L. W.....	Willow Bunch.....	10, 11 23	4	27 2	Willow Bunch
Robinson, H.....	Buffalo Gap.....	16 11	2	26 2	Buffalo Gap
Salaba, Frank G.....	Willow Bunch.....	1,2,7,8 17	5	27 2	Willow Bunch
Salaba, G. J., <i>Operator</i>	Willow Bunch.....	1 18 4 17	5	27 2	Willow Bunch
Slater, Dan.....	Bengough.....	1,2 16	5	22 2	Ritchie
Spooner & McEwen.....	Bengough.....	9, 16 10	4	23 2	Bengough
Straza, Dan J.....	Wood Mountain Station.....	4 15	5	4 3	Wood Mountain Station
Thatcher, G. C.....	Stonehenge.....	3,9,14,15 20	6	1 3	Stonehenge
xWarren, Wm.....	Fife Lake.....	N. $\frac{1}{2}$ 10 28 S. $\frac{1}{2}$ 15	1	28 2	Fife Lake
Wilhelm, Roy and Robert.....	Verwood.....	11, 12 29	6	27 2	Verwood

SHAUNAVON AND EAST END AREAS

Bednarik, John.....	Shaunavon.....	4, 5 3	9	18 3	Kelstern (5 mi. NW of Shaunavon)
Bowman Mine (L. F. Wilkins, <i>Owner</i>).....	Shaunavon.....	9 22	7	19 3	Shaunavon, SW. of
*Cox, W. J.....	Shaunavon.....	13 30	7	18 3	Shaunavon, S. of
*Freeman, Bruce.....	South Fork.....	13 36	7	21 3	South Fork
xGosselin, Clement.....	Dollard, Box 18.....	4 9	7	19 3	Dollard, S. of
Jacques, Joseph E., <i>Operator</i>	South Fork.....	9, 10 35	7	21 3	South Fork
Knoblauch, Ernest.....	Shaunavon, Box 512.....	3 31	7	18 3	Shaunavon, S. of
Larsen, Peter.....	East End.....	14 13	6	22 3	East End, W. of
Spirka, K.....	Shaunavon.....	1 4	9	18 3	Kelstern, W. of
xWilkins, Herman W.....	Shaunavon, Box 312.....	3 30	7	18 3	Shaunavon, S. of
Wilkins, Leonard F., <i>Owner</i> (See also Bowman Mine)	Shaunavon, Box 304.....	(4, 6 23 4 23	7	19 3	Shaunavon, S. of

ALBERTA

ARDLEY

Barrell, Wm. & A. Auvigne.....	Ardley.....	10 20	38	23 4	Ardley
Blades, Jas.....	Delburne, R.R. 2.....	3 4 15	38	22 4	Delburne
Anderson, A.....	Delburne.....	3 17	38	23 4	Delburne
Kehl & McGladrie.....	Nevis.....	4 5 35	37	22 4	Nevis
Kurp, Carl B.....	Delburne.....	4 7	38	23 4	Alix
Lynass, John H.....	Delburne, Box 445.....	16 7	38	23 4	Delburne
Munro & Son, S. S.....	Ardley.....	12 35	38	23 4	Ardley
Sissons, John W.....	Alix.....	(E. of C.N.R. W. $\frac{1}{2}$ NE. $\frac{1}{4}$)	6 33	38 23 4	Alix
Russell, Chas. M.....	Alix, R.R. 1.....	3 29	38	23 4	Alix
Straub, F.A..... (J. C. Craig, <i>Operator</i>)	Alix, R.R.....	5 17	38	23 4	Alix

DIRECTORY OF FIRMS—Continued

Coal Mining Industry—Continued

ALBERTA—Continued

BIG VALLEY

Operator	Head office	Mine location						Mine office
		Section			Tp. R. W.			
		Part L. S. No.						
Big Valley Coal Co..... (John McAllister & Robt.)	Big Valley.....	1 26			35 20 4			Big Valley
Campkin, & Sons, Robt.....	Lousana, R.R. 1.....	15 16 12			36 22 4			Elnora
Ginther & Boise.....	Elnora.....	N. $\frac{1}{2}$	7 30		34 21 4			Elnora

BROOKS

Kleenbirn Collieries, Ltd.....	Eyremore.....	1, 2 7, 8	15	17	17 4	Eyremore (Kitsim)
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CAMROSE

Burnstad, Sigurd H.....	Ohaton.....	3, 6	14	48	18 4	Ohaton
Alberta Coal Co., Ltd.....	Calgary, 332-7 Ave. W....	2, 7	29	46	19 4	Camrose
Proskov, Joseph.....	Dinant.....	3, 4	18	48	19 4	Dinant
Red Flame Coal Co., Ltd.....	Round Hill.....	SW. $\frac{1}{4}$	14 19	48	18 4	Round Hill
Shute, Geo. <i>et al.</i>	Dinant.....	N. $\frac{1}{2}$	8, 9	7	48 19 4	Dinant
Strlehuik, Leo.....	Ohaton, R.R. 2.....		8 10	48	18 4	Ohaton

CARBON

Balogh Bros. (Arctic C. Co.).....	Carbon, Box 252.....		16 12	29	23 4	Carbon
Campbell, C.C.....	Trochu.....	9,	10 29	33	22 4	Trochu
Davidson, W.W.....	Three Hills.....	E. $\frac{1}{2}$	2 9	31	22 4	Ghost Pine Creek
East Carbon Coal Co., Ltd..... (Fox Bros., Operators)	Carbon.....		10 7	29	22 4	Carbon
East Trochu Coal Mine.....	Trochu.....		10, 9 15, 16	14	33 23 4	Trochu
Fox, Alfred.....	Carbon.....		3 14	29	23 4	Carbon
Halbert Bros.....	Trochu.....		8 14	33	23 4	Trochu
Inland Coal Co., Ltd.....	Edmonton, 804 McLeod Bldg.	NE. $\frac{1}{4}$	25	31 24	4	Three Hills
Knee Hill Coal Co., Ltd..... (Pastorchik and Partners)	Calgary, 22 Travellers Bldg.		9 9	31	22 4	Ghost Pine Creek
Peerless Coal Co.....	Carbon.....		2 15	29	23 4	Carbon
Pickering, B. (Orkney mine).....	Ghost Pine Creek.....	2,	3 6	31	21 4	Ghost Pine Creek
Ryning, Jas. W.....	Rowley.....		4 13	32	21 4	Rowley
Sarcee Coal Co., Ltd..... (M. E. Morel, <i>et al.</i>)	Ghost Pine Creek.....		8 10	31	22 4	Ghost Pine Creek
Reissig, Erik.....	Trochu.....	W. $\frac{1}{2}$	15 14	33	23 4	Trochu

CASCADE

Canmore Mines, Ltd., The.....	Canmore.....	NE. $\frac{1}{2}$	1 29	24	10 5	Canmore
Wheatley & Sons, Frank.....	Banff, Box 341.....		12 4	26	11 5	Banff (near Anthra- cite)

CASTOR

Ainsworth, J. H.....	Halkirk.....		13 25	40	16 4	Halkirk
Annan, A., Annanson, H. O., and J. Radford	Donalda.....		5 28	41	17 4	Donalda
Battle River Coal Mine..... (James Bradley)	Foreman.....		16 26	40	16 4	Foreman
Bish Bros.....	Forestburg.....		15 36	40	16 4	Hastings Coulee
Bradley, J. and O'Brien, A.....	Halkirk.....		14 25	40	16 4	Halkirk
Castor Coal and Construction Co.....	Castor.....	3 to 6	3 38	14 4		Castor
Chiswick, James.....	Gadsby.....		6, 11 28	39	16 4	Gadsby
Cordel, Jean F.....	Halkirk.....	Fl.	6, 7, 8	20 40	15 4	Halkirk
Davis & Gormley.....	Halkirk.....		10 8	39	15 4	Halkirk
Easton, James.....	Castor.....		14 34	37	14 4	Castor
Glen Bank Coal Co..... (Joe Tyrluk, Operator)	Heisler.....		9 28	42	17 4	Heisler
Hronek, Ben.....	Halkirk, Box 144.....		1 7	39	15 4	Halkirk
Johnson, C.....	Forestburg.....		13 28	40	15 4	Forestburg

DIRECTORY OF FIRMS—Continued

Coal Mining Industry—Continued

ALBERTA—Continued

CASTOR—Concluded

Operator	Head office	Mine location				Mine office		
		Section		Tp. R. W.				
		Part L. S. No.						
Jones, Wm.....	Forestburg.....	10	32	40	15	4	Forestburg	
Komperdo & Partners.....	Heisler.....	13	22	42	17	4	Heisler	
K. M. Coal Mine.....	Forestburg.....	16	2	41	16	4	Forestburg	
(Killam Mfg. Co., Ltd., Strome)								
Lien, Edwin A.....	Edberg.....	6	2	44	19	4	Edberg	
Marshall, John W.....	Donalda, R.R. 1.....	12	16	42	17	4	Donalda	
Mills & Sons, J. J.....	Heisler.....	5	22	42	17	4	Heisler	
Miner, A. T.....	Rosalind.....		4	43	17	4		
Mitchinsons, Thomas.....	Donalda.....	10,	11	29	41	17	4	Donalda
Muncy, Howard C.....	Foreman.....	15	26	40	16	4	Foreman	
Phillips, W. T. and W. J.....	Castor, Box 160.....	1, 2	4	38	14	4	Castor	
Remillard, O. V., <i>Operator</i>	Castor.....	15, 16	33	37	14	4	Castor	
Sorken, Alfred.....	Killam.....	16	26	40	16	4	Castor	
Strader & Bailey.....	Gadsby.....	11, 14	28	39	16	4	Gadsby	
Strader, Chas.....	Halkirk.....	4	17	39	15	4	Halkirk	
Strickland, Thos. and Partners.....	Heisler.....	1	33	42	17	4	Heisler	
Wiltse, Floyd N.....	Halkirk.....	W. ½	11, 12	39	39	15	4	Halkirk
Wiltse & Krammer.....	Forestburg.....	8	32	40	15	4	Forestburg	

CHAMPION

McGaw, Albert M. S.....	Champion.....	15	33	15	23	4	Champion
Popovich, Mike.....	Champion.....	9	8	16	23	4	Champion
Rhodes, Geo.....	Champion.....	7	8	15	22	4	Champion

COALSPUR

Bryan Hard Coal Co., Ltd.....	Edmonton, 309 Agency Bldg.....	11	15	49	21	5	Robb (Mile 32)
Coal Valley Mining Co., Ltd.....	Edmonton, 705 McLeod Bldg.....	7	25	47	20	5	Coal Valley
Foothills Collieries, Ltd.....	Winnipeg, 222 Portage Ave.....	10	24	47	20	5	Foothill
Lakeside Coals Ltd. (Mine No. 2).....	Edmonton, Jasper Ave. and 93rd St.....	N. ½ S. ½	14	49	21	5	Robb
McLeod River Hard Coal Co. (1941) Ltd.....	Nanaimo, B.C.....	5	25	48	22	5	Mercoal
Sterling Collieries Co., Ltd.....	Edmonton, 912 McLeod Bldg.....	12	35	47	20	5	Sterco

CROWSNEST

Hillcrest Mohawk Collieries, Ltd.....	Bellevue.....	SE. ½	27	7	3	5	Bellevue
International Coal & Coke Co., Ltd.....	Coleman.....		11 8	8	4	5	Coleman
McGillivray Creek Coal & Coke Co., Ltd.	Coleman.....	SW. ¼	2 17	8	5	5	Coleman
Neumann Bros.....	Pincher Creek, Box 46...		5, 6 11	5	1	5	Pincher Creek
West Canadian Collieries, Ltd.....	Blairmore.....		9 20	7	3	5	Bellevue
			10 2	8	4	5	Blairmore
			10, 11 31	6	3	5	Bellevue
			30				
Wood & V. Sulava.....	Beaver Mines.....		10 3	6	2	5	Beaver Mines

DRUMHELLER

Aetna Coal Co.....	East Coulee.....	1	22	28	19	4	Rosedale Ferry
Arcadia Coal Mines, Ltd.....	Calgary, 405 MacLean Block.....	16	7	28	18	4	Willow Creek
(Sask. Fed. Co. Op's., Ltd.)							
Atlas Coal mine.....	Drumheller.....	13	21	27	18	4	East Coulee
Brilliant Coal Company.....	Drumheller.....	14	15	29	20	4	Drumheller
Chambers, H. S.....	Delia.....	FL.	22	28	18	4	Delia
			23				
Castle Coal Co., Ltd.....	Wayne.....	16	7	28	19	4	Wayne
Commander Coal mine.....	Drumheller.....	5	9	29	20	4	Drumheller
Foye, E. B.....	Drumheller, Box 734.....	10	22	28	18	4	Willow Creek
Hamilton, John.....	Delia, Box 312.....	xx10	23	28	18	4	Delia
Hy-Grade Coal Mining Co., Ltd.....	Drumheller, Box 200.....	13	11	29	20	4	Drumheller (Midland road)
Ideal Coal Co., Ltd.....	Wayne.....	16	1	28	20	4	Wayne
Kidd, Gordon L.....	Drumheller, Box 230.....	11	14	29	20	4	Drumheller

DIRECTORY OF FIRMS—Continued

Coal Mining Industry—Continued

ALBERTA—Continued

DRUMHELLER—Concluded

Operator	Head office	Mine location				Mine office
		Section		Tp.	R. W.	
		Part	L. S. No.			
Maple Leaf Minerals, Ltd.....	Drumheller.....		13 32	27 18	4	Willow Creek
Midland Coal Mining Co., Ltd.....	Drumheller.....		{10 9	29 20	4	Drumheller (Midland- vale)
Minute Coal Co., The.....	Drumheller, Box 237....		11			
Monarch Coal Mining Co., Ltd.....	Calgary, 405-8th Ave. W.		8 14	29 20	4	Drumheller
Murray Collieries, Ltd.....	East Coulee.....		1 20	27 18	4	East Coulee
Newcastle Collieries, Ltd.....	Drumheller.....		1 29	27 18	4	East Coulee
Red Deer Valley Coal Co., Ltd.....	Drumheller, Box 20.....	NE. ¼	14 3	29 20	4	Drumheller
Regal Coal Co., Ltd.....	Calgary, 808 Lancaster Bldg.		7	29 20	4	Nacmine (Drumheller)
Rosedale Collieries, Ltd.....	Calgary, 909 Lancaster Bldg.	SE. ¼	{14 28	28 19	4	Rosedale Station
Sask. Fed. Co. Op's., Ltd.....	East Coulee.....		2 27	28 19	4	Aerial
Sovereign Coal Mine..... (O'Dwyer & O'Dwyer)	Wayne.....	NE. ¼	2 32	27 18	4	East Coulee
Western Gem & Jewel Collieries, Ltd....	Calgary, 606 Lancaster Bldg.	NW. ¼	8 8	28 19	4	Wayne
Whittaker, O. W.....	Beynon.....		6 15	28 19	4	Cambria
			5 6	27 20	4	Beynon

EDMONTON

Banner Coals, Ltd., Operator.....	Edmonton, 10631-92nd St.		10 8	55	24 4	Carbondale (Sturgeon Valley)
Beaver Hills Coal Co..... (C. F. MacLachlan, Operator)	Edmonton, 10123-117th St.		8, 9 7	53	21 4	.....
Beverly Coal, Ltd.....	Beverly.....		6 13	53	24 4	Beverly
Black Point Mine Co., Ltd..... (Dolinski, Yaniv & Maik)	South Edmonton, Box 4124		6 25	51	25 4	South Edmonton (Black Point)
Camarta, John, Operator.....	Cardiff.....		1 32	55	25 4	Cardiff
Chiarello, D.....	Legal.....	11	14 26	57	25 4	Legal
Dickinson Bros. & Knight.....	Carbondale.....	SE.	17	55	24 4	Carbondale
Edmonton Collieries, Ltd.....	Edmonton, 10055-101st St.		14 36	54	25 4	Namao
Egg Lake Coal Co..... (Thos. J. Logan, Operator)	Morinville, R.R. 2.....	NE. ½	36	56	26 4	Morinville
Great West Coal Co. Ltd., The.....	Edmonton, 10117-100A St.	SE. ½	10 7	53	23 4	Clover Bar
Gwilliam, George S.....	Namao.....		3 6	55	24 4	Namao
Horkulak, A.....	South Edmonton.....		15, 16 26	51	25 4	South Edmonton
Long Coal Co., Ltd.....	Namao.....	3,	4 31	54	24 4	Namao
Mucha, J. C.....	South Edmonton.....		13 25	51	25 4	South Edmonton
Nimko Mine.....	South Edmonton, Box 4035		10 25	51	25 4	South Edmonton
Ottewell Coal Co.....	Clover Bar.....	SW. ½	{17	53	23 4	Clover Bar
Pine Creek Coal Co..... (Opalinski & Stephen Fridel)	South Edmonton, R.R.3		15) 36	52	24 4	South Edmonton
Red Hot Coal Co., Ltd.....	Edmonton, 10841-93rd St.	River lot	4, 3 25	51	25 4	Forest Heights
Riverdale Coal Co., Ltd.....	Edmonton, 10311 Sask. Drive	SW. ½	8	55	24 4	Namao
Samis Collieries.....	Namao.....		{3, 4 36	54	25 4	Namao
Sinoski, Mike.....	South Edmonton, Box 4024		{5, 6 5	51	25 4	Ellerslie
Starky, Co. Ltd., J. B.....	Edmonton, 10631-92nd St.	S. ½	35	55	25 4	Carbondale
Sundance Mines, Ltd.....	Cardiff.....		16 23	55	25 4	Cardiff
White Star mine..... (Waytowich & Senetcheo)	Edmonton South, 11247-90th st.		14 25	51	25 4	.....

GLEICHEN

Blackfoot Indian Agency.....	Gleichen.....		{1, 12	21	21 4	Gleichen (on reserve, S. of Cluny)
Consumers Coal Co..... (John Guiney & H. Rasmussen)	Rosebud, Box 34.....		{33 20	19 4		Rosebud
Lucky Strike Coal Mine..... (Alex McMillan, Operator)	Rosebud, Box 44.....		3 29	26	21 4	Rosebud
Schnepf, Karl J.....	Rosebud.....	S. ½, N. ½	14 20	26	21 4	Rosebud
Standard Coal Mine (Castella Bros).....	Standard.....		5 11	25	22 4	Rosebud Standard

DOMINION BUREAU OF STATISTICS

DIRECTORY OF FIRMS—Continued

Coal Mining Industry—Continued

ALBERTA—Continued

HALCOURT

Operator	Head office	Mine location				Mine office		
		Section		Tp. R. W.				
		Part L. S. No.						
Baldwin Collieries.....	Grande Prairie.....	15	35	70	7	6	Grande Prairie	
Campbell, R. C., & M. O'Reilly.....	Dimsdale.....	N.W. ¼	2	21	70	7	6	Dimsdale
Dahl & Cage.....	Halcourt.....	14	24	70	11	6	Halcourt	
Fraser, Wm.....	Halcourt.....	2	21	70	10	6	Hinton Trail (17 mi. SW. of Beaverlodge)	
Grubb, C. D.....	Hualien.....	1	18	70	9	6	Hualien	
Johnston, Ralph O. & Sons.....	Grande Prairie.....			69	5	6	Grande Prairie, 25 mi. SE. of	
Pinto Creek Coal Mines Ltd..... (E. A. & W. E. Doupe, <i>Operator</i>)	Wembley.....			69	10	6	Wembley, 37 mi. SW.	
Schneider, Nikolaus.....	Dimsdale.....	4,	5	7	70	8	6	Dimsdale
Schultz, Thos. L.....	Grande Prairie.....			70	7	6	Grande Prairie	

HIGH PRAIRIE

Smoky River Coal Co. (Tissington & Shultz)	High Prairie.....	N. ½ 5; 12 27	72	20	5		High Prairie
Triangle Mining Co., Ltd. (Cyril T. Jones, <i>Operator</i>)	Edmonton, 10026-102nd Ave.	SW. ¼ 8 28	72	20	5		High Prairie, 30 mi. W. of

HIGHWOOD

Allied Industrials, Ltd.....	Calgary, 303 Toronto General Trusts Bldg.	NE. ¼ 15	19	7	5		Longview
Ford Highwood Collieries, Ltd.....	Toronto, Room 1701, Victory Bldg., 80 Richmond St. W.		17	6	5		Longview, 25 mi. W. of
E.P. Coal Mine (E. Payne).....	Turner Valley, c/o F. Nash	7 24	19	6	5		Lineham, .. mi. W. of
			18 6 5				Lineham, .. mi. W. of
			19 7 5				

LETHBRIDGE

Chester, J. C.....	Lethbridge, Box 5.....	9 30	9	21	4		Lethbridge
Forsyth Coal Co.....	Lethbridge, 2033-1st Ave. N.	5 8	7	21	4		Magrath
Hamilton Coal Co., J. J.....	Lethbridge, Box 140.....	11 24	9	22	4		Lethbridge
Lethbridge Collieries, Ltd.....	Lethbridge, 207-7th St. S.	11 30	10	21	4		Shaughnessy
		3 2	9	22	4		Lethbridge
New Royal View Mine.....	Lethbridge, 635-13th St. N.	12 29	9	21	4		Lethbridge
Razzolini, Albert.....	Magrath, Box 180.....	3 7	7	21	4		Magrath
Rollinson Mine, Geo.....	Lethbridge, Box 432.....	2 11	8	22	4		Lethbridge, 8 mi. SW.
Vulcan Mining & Construction Co. (McArthur, Allen & Leon, <i>Operators</i>).....	Lethbridge, 1117-2nd Ave. S.	3 7	7	21	4		Raymond

MILK RIVER

Duggan, F. W. and Pierce, E.....	Masinasin.....	10, 15 17	2	12	4		Masinasin (Kippenville)
Taylor, Thos., <i>Operator</i>	Groton.....	10 10	3	11	4		Groton, SW. of

MORLEY

Ainsley & Sons, B.....	Calgary, 5717-3rd St. SW.	25	25	7	5		Morley Sta., 2½ mi. SW. of
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DIRECTORY OF FIRMS—Continued

Coal Mining Industry—Continued

ALBERTA—Continued

MOUNTAIN PARK

Operator	Head office	Mine location			Mine office
		Section	Tp. R. W.		
		Part L. S. No.			
Cadomin Coal Co., Ltd.....	Cadomin.....	14 31	46 23 5	Cadomin	
Gregg River Collieries.....	Edmonton, 418 McLeod Bldg.	7, 8 28	47 24 5	Gregg River	
Luscar Coals, Ltd.....	Edmonton, 410 Tegler Bldg.	{ 7 23 24	47 24 5	Luscar	
Mountain Park Coals, Ltd.....	Edmonton, 410 Tegler Bldg.		32	47 24 5 45 23 5	Mountain Park
King Coals, Ltd. (H. Croxton).....	Edmonton, 10226-116th	36	45 24 5	Cadomin	

NORDEGG

Brazeau Collieries Ltd.....	Nordegg.....	13 22	40 15 5		Nordegg
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PAKOWKI

Raeder, Wm.....	Elkwater.....	7, 10 23	8 3 4		Elkwater
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PEKISKO

Davies, G. C., <i>Operator and Lessee</i>	Priddis.....	10 4	22 3 5		Priddis
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PEMBINA

Donvie Collieries, Ltd.....	Wabamun.....	7 8 30	52 4 5		Stony Plain
Fry, N. and Larsen, T.....	Seba Beach.....	16 25	53 6 5		Seba Beach
Gainford Collieries.....	Gainford.....	SE. $\frac{1}{4}$ 36	53 6 5		Gainford
Hunt, Harold D.....	Gainford.....	SW. $\frac{1}{4}$ 31	53 5 5		Gainford
Lakeside Coals, Ltd.....	Edmonton, 93rd St. at Jasper	N. $\frac{1}{2}$ 16	53 4 5		Wabamun (N. of Lake Wabamun)
Lothian Collieries, Ltd.....	Wabamun.....				Wabamun
Pembina Collieries, Ltd.....	Pembina.....	NW. $\frac{1}{4}$ 34	53 7 5		Pembina
(G. Ostertay)		12 36			
Robinson, Wm.....	Entwistle.....	5 34	53 7 5		Entwistle
Schon, Karl.....	Moon Lake.....	9, 16 23	49 7 5		Moon Lake
		13 24			
Strawberry Creek Coal Co., Ltd.....	Warburg.....	6 11 13	49 3 5		Warburg
Wright, H. H.....	Genesee.....	11 33	49 2 5		Genesee
Yellowknife Transport Co., Ltd.....	Edmonton, 10509-100 Ave.	22	50 3 5		Genesee

PINCHER

Keith Coal Co., Albert.....	Lundbreck.....	SW. $\frac{1}{4}$ 15 26	7 2 5		Lundbreck
Mitchell, T.....	Lundbreck.....	10 26	7 2 5		Lundbreck

PRAIRIE CREEK

Jasper Coals, Ltd.....	Edmonton, 10117-100A St. (Box 475)	NE. $\frac{1}{4}$ 18	51 24 5		Drinnan
Ruby Glow Coal Mines.....	Hinton.....		51 25 5		Hinton
Woodley, C. M. & Partners.....	Hinton.....	4 29	50 25 5		Hinton

REDCLIFF

C ooke, C. R., & Naylor, C. A.....	Medicine Hat.....	2 5	13 6 4		Medicine Hat
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DOMINION BUREAU OF STATISTICS

DIRECTORY OF FIRMS—Continued

Coal Mining Industry—Continued

ALBERTA—Concluded

ROCHESTER and WESTLOCK

Operator	Head office	Mine location			Mine office	
		Section	Tp. R. W.			
		Part L. S. No.				
North Point Coal Co..... (Tomilson, Kaszuba & Dombroski, Operators)	Thorhild.....	1 11	60 21 4	Thorhild		
Pickardville Coal Co.....	Edmonton, 9732-110th St.	SW. $\frac{1}{4}$ 5	59 26 4 58 27 4	Pickardville		
Thorhild Coal Co.....	Thorhild, Box 44.....	N. $\frac{1}{4}$ 12 12 S. $\frac{1}{4}$ 13	60 21 4	Thorhild		

SAUNDERS

Alexo Coal Co., Ltd.....	Alexo.....	9 27	40 13 5		Alexo (100 mi. W. of Red Deer)
Bighorn & Saunders Creek Collieries, Ltd.	(Blairmore..... Saunders.....)	9 24	40 13 5		Saunders

SHEERNESS

Bordula, A. J. & Partners.....	Hanna.....	16 12	29 13 4		Sheerness
Chinook Coal Co., Ltd.....	Sheerness.....	1 12	29 13 4		Sheerness
Gaetz, C.....	Hanna, R.R. 3.....	1 6	29 14 4		Hanna, 13 mi. S. of (Gowans Coulee)
Ironside, T. G., & A. Glover.....	Scapa, R.R. 2.....	12 5	34 13 4		Scapa, 7 mi. E. of (Garden Plain)
Litke, Bros.....	Hanna, R.R. 1.....	SW. $\frac{1}{4}$ 6 29	32 13 4		Hanna
Masciangelo, John.....	Delia, Box 178.....	10 21	30 17 4		Delia
Pahl & Sons, Fred M.....	Hanna, R.R. 1.....	SE. $\frac{1}{4}$ 7 30	32 13 4		Hanna
Sheerness Coal Co., Ltd.....	Sheerness.....	4 15 9	29 12 4		Sheerness

TABER

Lavenne, Clement J..... (Acadia Coal Mines Ltd.)	Bow Island, Box 127....	3 27	12 10 4		Bow Island
McCracken, D., & Goring, H.....	Aldersen.....	28	12 10 4		Aldersen
Oliver Coal Mine, Lewis.....	Taber.....	2 18	10 16 4		Taber
Southern Alberta Coal Co.....	Calgary, 332-7th Ave. W.	7 8 26	9 13 4		Grassy Lake
		4 26	9 13 4		Grassy Lake
		30	10 16 4		Taber
		7 8 12	10 17 4		Taber

TOFIELD

Binder, Christopher.....	Ryley.....	5 9	49 17 4		Ryley
Black Nugget Coal Co., Ltd..... (Fred Irving, Operator)	Dodds.....	15 11	49 18 4		Dodds
Dodds Coal Mine..... (Skarin & Clarke, Operators)	Dodds.....	2 3 14	49 18 4		Dodds
Ryley Coal Co..... (Zacharchuk et al, Operators)	Ryley.....	8 8	49 17 4		Ryley
Tofield Coal Co., Ltd.....	Tofield, Box 141.....	N. $\frac{1}{4}$ 26	50 19 4		Tofield

WETASKIWIN

Gill, Peter.....	Thorsby, R.R. 2.....	2 7 3	48 27 4		Thorsby
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WHITECOURT

Pritchard, R. F.....	Blue Ridge.....	N. $\frac{1}{4}$ 16 30 S. $\frac{1}{4}$ 1 31	59 10 5		Blue Ridge
Watson, Alex.....	Blue Ridge.....	12 13 19 9 16 24	59 10 5 59 11 5		Blue Ridge

DIRECTORY OF FIRMS—Continued

Coal Mining Industry—Concluded

BRITISH COLUMBIA

VANCOUVER ISLAND

Operator	Head office	Mine location	Mine office
Biggs, James.....	Nanaimo, 813 Douglas Rd.	Wellington.....	Nanaimo
Canadian Collieries (Dunsmuir), Ltd....	Nanaimo.....	Cumberland.....	Cumberland, 1 mi. from Cumberland, 1 mi. NW.
		Cumberland.....	Bevan, Lake Trail Rd. S. Wellington, 7 mi. S. of
		Cranberry.....	Nanaimo, 14 mi. SW of
		Wellington.....	Extension
Carruthers & Wakelam.....	Nanaimo, 160 Bastion St.; Box 68	Wellington.....	Nanaimo
(Wellington No. 3 mine)			
Chambers, Ralph H.....	Nanaimo, 86 Victoria Rd.; Box 29	Wellington.....	Nanaimo (Ext. No. 3)
Dunn, Andrew.....	Nanaimo, 307 Bruce Ave.	Wellington.....	Extension (Ext. No. 1)
Hamilton, Robt. N.....	Extension.....	Wellington.....	Extension
Lewis, Glyn and Jos. Wilson.....	Nanaimo, 508 Rosehill Ave.	Cranberry.....	Timberlands
(Wellington No. 8 mine)			
London, Wm. D.....	Nanaimo, 160 Bastion St.; Box 68	Wellington.....	Nanaimo
(Wellington No. 5 mine)			
McKellar, Ross & Carroll.....	Nanaimo, 517 Nicol....	Cranberry.....	Cassidy, 10 mi. S. of Nanaimo
(Cassidy Mines)			Nanaimo
Pacific Coal Mine, Wellington No. 9.....	Nanaimo, 160 Bastion St.; Box 68	Wellington.....	Nanaimo
(H. Gerlock and F. John)			
Stronach's Mine, C.....	Wellington.....	Wellington.....	Wellington

CROWSNEST

Hillcrest Mohawk Collieries, Ltd.....	Bellevue, Alberta.....	Corbin.....	Corbin, B.C.
Consolidated Mg. & Smelting Co. Ltd., The	Trail.....	Coal mt'n, portion of north-erly half	Trail, B.C.
Crow's Nest Pass Coal Co. Ltd., The....	Fernie.....	Michel Creek.....	Fernie, 21 mi. NE. of

INLAND

British Lands, Ltd.....	Kelowna, Box 283	Finlay Creek.....	Princeton, 6 mi. SW. of
Taylor, James.....	Princeton.....	Princeton, 4 mi. W. of.....	Princeton, 2 mi. W. of
Tulameen Collieries, Ltd.....	Vancouver, 716 Hall Bldg.	Princeton.....	Princeton, 2 mi. W. of
Merritt Coal Mines, Ltd.....	Merritt.....	Nicola valley.....	Merritt, 2 mi. E. of
Coldwater Colliery.....	Merritt.....	Nicola valley.....	Merritt
(Gerrard, Berkley & Allan)			
Hat Creek Coal Mine.....	Pavilion.....	Upper Hat Creek.....	Pavilion, 15 mi. E. of Ashcroft, 30 mi. NW. of
(St. Eugene Mg. Corp., Operator)	Vancouver, 850 Hastings W.		
Hutton, F.....	Australian.....	Australian Creek.....	Quesnel, 19 mi. S. of
Armstrong, Wm., & Robt. Day.....	Cottonwood.....	Lightning Creek.....	Quesnel, 25 mi. E. of (Wingdam)
Donnelly, James J.....	Quesnel.....	Fraser River, east side.....	Quesnel, 7 mi. NE. of
Cariboo Central Placers, Ltd.....	Cottonwood.....	Lightning Creek.....	Quesnel, 7 mi. NE. of
Hasler Creek Coal Co. Ltd.....	Dawson Creek.....	On Hasler Creek.....	Little Prairie, 18 mi. SW. of
Gething, Quentin F.....	Hudson Hope.....	Bullhead Mountain, east slope of	Hudson Hope, 12 mi. W. of
Peace River Coal Mines, Ltd.....	Victoria, 106 Union Bldg.	Bullhead Mountain, NW. slope of	Hudson Hope, 12½ mi. W. of
Bulkeley Valley Collieries, Ltd.....	Telkwa, Box 3.....	On Goathorn Creek.....	Telkwa, 7½ mi. S. of
(F. M. Dockrill, Lessee)			
Telkwa, Co., Ltd.....	Telkwa, Box 27.....	Telkwa River.....	Telkwa, 6 mi. NE. of
Campbell, Ed. F.....	Vancouver, 1325-15th Ave. W.	Glacier Creek.....	Smithers, 4 mi. N. of
		Coal Creek, E.....	Quick Sta., 20 mi. NE. of

YUKON and NORTHWEST TERRITORIES

Five Fingers Coal Co.....	St. Paul, Minn., 713 New York Bldg.	Yukon.....	Carmacks
.....	Fort Norman, N.W.T....	N.W.T.....	Norman, 20 mi. S. of

DIRECTORY OF FIRMS—Continued

Firms in the Natural Gas Industry

- NOTE (a) Drilling only.
 (b) Distributing only.
 (c) Drilling and producing.
 (d) Pipe line company.
 (e) Using or selling gas from absorption plant.

Name	Address	Location of field
NEW BRUNSWICK—		
Moncton Electricity and Gas Co. Ltd. (b)...	700 Main St., Moncton.....	Stoney Creek
New Brunswick Gas & Oilfields, Ltd.....	Box 194, Moncton.....	
ONTARIO—		
Acme Gas Syndicate.....	Ridgeway.....	Bertie
Aloka Oil Co. Ltd.....	57 Queen St. W., Toronto.....	Dereham
Amer-Can Oil & Gas Co.....	215 King St., Chatham.....	Dover, Tilbury E., and Walpole
Ashton, J. L. (a).....	Chatham.....	
Barnhart, Mrs. E.....	Stevensville.....	Bertie
Bates, Norman.....	Humberstone.....	Humberstone
Beachville Natural Gas Syndicate (b).....	Beachville.....	
Beaver Oil & Gas Syndicate.....	14 King St. E., Toronto.....	Walpole
Belmont Gas Co. (b).....	815 Lawrence Rd., Windsor.....	
Benner, K. W.....	Fisherville.....	Rainham
Benner & Tinney.....	Fisherville.....	Rainham and Walpole
Bertie Township Gas & Oil Syndicate.....	Fisherville.....	Bertie and Willoughby
Big Seven Gas Syndicate.....	Fisherville.....	Rainham
Binbrook Gas Co.....	Binbrook.....	Binbrook
Bliss, Douglas E.....	Tillsonburg.....	Middleton
Brindley & Harper.....	Dunnville.....	Brantford
Broadway Gas Syndicate.....	Cayuga.....	Walpole
Buck, C. S.....	Port Rowan.....	Walsingham South
Burchell Natural Gas & Oil Syndicate.....	R.R. Listowel.....	Woodhouse
Canada Cement Co. Ltd.....	Montreal, Que.....	Wainfleet
Canadian Natural Gas Syndicate.....	Simcoe.....	Bayham and Moulton
Canfield Gas Syndicate.....	703 Capitol Park Bldg. Detroit 26, Michigan, U.S.A.....	Cayuga North
Canfield Natural Gas Co. Ltd.....	Dunnville.....	Cayuga North
Cartwright, S. E.....	1972 Penobscot Bldg. Detroit, Michigan, U.S.A.....	Walpole
Cayuga Gas Syndicate.....	Cayuga.....	Cayuga South
Central Pipe Line Co. Ltd. (c).....	Chatham.....	Bayham, Houghton and Malahide
Central Senaca Gas Syndicate.....	Cayuga.....	Senaca
Chippawa Creek Gas Syndicate.....	Drawer 200, Fort Erie N.....	Willoughby
Chira Gas Syndicate (b).....	Norwich.....	
City Gas Company of London (b).....	London.....	
Coleman, J. A. Estate.....	Wellandport.....	Gainsborough
Columbia Natural Gas Co.....	Brodhagen.....	Dunn
Coronation Gas Syndicate.....	Stevensville.....	Bertie
Crowland Gas Syndicate (c).....	R.R. 4, Welland.....	Crowland
Culver, Marvin & Son (a).....	Rainham Centre.....	
Culver & Havill (a).....	Stevensville.....	
Dain City Gas Syndicate.....	208 Burger St., Welland.....	Bertie and Humberstone
Dawson, Ralph.....	Merlin.....	Tilbury East
Delhi Gas Syndicate.....	Cayuga.....	Windham
Dennis, G. A. (a).....	R.R. 2, Selkirk.....	
Dominion Natural Gas Co. Ltd.....	220 Delaware Ave., Buffalo 2, N.Y., U.S.A.....	Aldborough, Binbrook, Caistor, Canboro, Charlotteville, Delhi Village, Dunn, Glanford, Humberstone, Malahide, Mersea, Middleton, Moulton, North Cayuga, North Dorchester, North Walsing- ham, Oneida, Onondaga, Port Dover, Port Rowan, Rainham, Raleigh, Romney, Senaca, Sherbrooke, South Cayuga, South Norwich, South Walsingham, Southwold, Tilbury East, Townsend, Wainfleet, Walpole, West Oxford, Windham, Woodhouse, and Yarmouth
Donald, Thomas G. (a).....	Hagersville.....	
Dunn Natural Gas Co. Ltd.....	907 Pigott Bldg., Hamilton.....	Dunn
Dunnville-Detroit Gas Syndicate.....	703 Capitol Park Bldg., Detroit, Michigan, U.S.A.....	North Cayuga
Economy Natural Gas Syndicate.....	25 Market Place, Stratford.....	Woodhouse
Ehde & Meier (a).....	Thamesville.....	
Elgin Prospecting Syndicate.....	Ridgeway.....	Humberstone
Elk Development Syndicate.....	Cayuga.....	Humberstone
Emerson, H. L. (c).....	R.R. 1, Dunnville.....	Canboro, Moulton and Wainfleet
Emerson, & Rose (a).....	Wainfleet.....	
Erie Prospecting Syndicate.....	18 Toronto St., Toronto.....	Walpole
Evans, H. L. (a).....	Box 743, Tillsonburg.....	
Fairbank-Ranee Gas Co.....	Petrolia.....	Enniskillen
Fa's View Gas Syndicate.....	Drawer 200, Fort Erie N.....	Stamford

DIRECTORY OF FIRMS—Continued

Firms in the Natural Gas Industry—Continued

Name	Address	Location of field
ONTARIO—Continued		
Featherstone, Roy.....	Caledonia.....	Oneida
Fisherville Gas Co.....	Fisherville.....	Rainham
Fleet Manufacturing & Aircraft Ltd.....	Fort Erie.....	Bertie
Fletcher, Eva.....	R.R. 2, Glanford Station.....	Binbrook
Fonthill-Ridgeville Gas Co. Ltd. (b).....	Box 511, Portland, Ind., U.S.A.....	
Fox, E. S.....	168 Thorold Rd. E., Welland.....	Thorold
Frontier Gas Syndicate.....	Fisherville.....	Bertie
Garringer, Wm. (a).....	Dunnville.....	
Garrison Gas Syndicate.....	Drawer 200, Fort Erie N.....	Bertie
Gas Producers Co.....	703 Capitol Park Bldg., Detroit 26, Michigan, U.S.A.....	Raleigh and Woodhouse
Gifford, Arthur & Son.....	R.R. 2, Cayuga.....	South Cayuga
Glenney, Elizabeth.....	R.R. 5, Dunnville.....	Canboro
Grand River Gas & Oil Syndicate.....	Canfield.....	Cayuga North
Grimsby Natural Gas Co. Ltd.....	Grimsby.....	Caistor, Gainsboro and Canboro
Hagersville Quarries Ltd.....	Hagersville.....	Walpole
Haldimand Gas Syndicate.....	Cayuga.....	Rainham
Haldimand Natural Gas Syndicate.....	Stevensville.....	Bertie
Harris, Wm. (a).....	R. R. 3, Jarvis.....	
Highland Oil Ltd.....	Chatham.....	Raleigh
Hodgson Bros. (a).....	Cayuga.....	
Hoover, A. E. (a).....	Selkirk.....	
Hoover & Donald (a).....	Selkirk.....	
Houk Syndicate.....	Dunnville.....	Moulton
House, C. C. (c).....	Stevensville.....	Bertie
Hussey, Wm. J. (a).....	Petrolia.....	
Ideal Gas Syndicate.....	Fisherville.....	Rainham
Imperial Oil Ltd., (Eastern Canada Exploration)	56 Church St., Toronto.....	Raleigh and Sombra
Irving, D. (a).....	Dunnville.....	
Ivy Drilling Co. (a).....	St. Catharines.....	
Jackson & Graff.....	Dunnville.....	Crowland
Jackson, P. L. (c).....	Dunnville.....	Walpole, Moulton, Canboro, North Cayuga, Rainham, Sherbrooke, Dunn, Crowland, Woodhouse, South Cayuga and Senaca
Jasperson, Bon.....	Kingsville.....	Gosfield South and Romney
Jenkins, S. S.....	282 W. North St., Buffalo, N.Y. U.S.A.....	Bertie and Townsend
Kent Gas Co.....	25 Market Place, Stratford.....	Walpole
Kerr, R.....	York.....	Senaca
Kiser Bros. (a).....	Chatham.....	
Lake Erie Gas Syndicate.....	54 Hambly Ave., Toronto.....	Rainham
Lake Shore Gas & Oil Syndicate.....	Ridgeway.....	Bertie
Lapp, Alvin.....	Stevensville.....	Bertie
Leamington, Town of (b).....	Leamington.....	
Lincoln Natural Gas Co.....	Dunnville.....	Canboro, Moulton, Caistor, Gainsboro, and Wainfleet
Little, R.W.....	222 Humbercrest Blvd., Toronto.....	Brant, Onondaga and Walpole
Locators Oils Ltd.....	22 King St. W., Toronto.....	Cayuga South and Middleton
Lomac Gas & Oil Co. Ltd.....	Port Stanley.....	Bayham
Lumefeld, S.....	Drawer 200, Fort Erie N.....	Bertie
Lymburner Bros. & Webber (c).....	Dunnville.....	North Cayuga, Rainham and Walpole
Mandley, Roy (a).....	Dunnville.....	
Maple Leaf Gas Syndicate.....	Ridgeway.....	Bertie and Crowland
McCutcheon, T. (a).....	Dunnville.....	
McDougall, Seymour.....	279 St. George St., Toronto.....	Rainham
McKechnie, Sam (c).....	Dunnville.....	Senaca and Walpole
McLister, J. I. (a).....	Dunnville.....	
McMaster, R. & Sons (c).....	Caledonia.....	
Mehlenbacher, L. B. & Sons Syndicate.....	Cayuga.....	Binbrook
Minor & Luck.....	Cheltenham.....	North Cayuga and Walpole
Mohawk Gas & Oil Syndicate Ltd.....	421 Main St. E., Hamilton.....	Sherbrooke
Monarch Gas & Oil Syndicate.....	Fisherville.....	Oneida and Walpole
		Dunn, South Cayuga and Wal-
		pole
		Bertie
Morningstar, R.....	Ridgeway.....	
Nagel, Elmer (a).....	Stevensville.....	
Nauman, W. R. (a).....	Selkirk.....	
Nauman Bros. (a).....	Fisherville.....	
New Malden Syndicate.....	430 Giles St. W., Windsor.....	Malden
Niagara Gas Syndicate.....	Fisherville.....	Bertie
Niagara Natural Gas Co. Ltd.....	Fort Erie N.....	Moulton
Niece, Elmond.....	Dunnville.....	Sherbrooke
Norotto Gas Co. Ltd. (b).....	Norwich.....	
North Cayuga Gas Syndicate.....	Cayuga.....	North Cayuga
North Shore Gas Co.....	Selkirk.....	Rainham
Noyes, L. A.....	Stevensville.....	Willoughby
Oil Springs Oil & Gas Co. Ltd. (b).....	Oil Springs.....	
Oxford Pipe Line Co. (d).....	100 Adelaide St. W., Toronto.....	
Palco, J. (b).....	Wainfleet.....	
Patterson & Culver (c).....	Dunnville.....	Oneida

DIRECTORY OF FIRMS—Continued

Firms in the Natural Gas Industry—Continued

Name	Address	Location of field
ONTARIO—Concluded		
Patterson, W. C. Gas Co. Ltd. (c).....	Box 914, Jamestown, N.Y., U.S.A.....	Dunn, Rainham, Walpole, North Cayuga, Wainfleet, Willoughby, Crowland, Bayham, Dereham and Humberstone
Peacock Point Gas & Oil Syndicate.....	Fisherville.....	Walpole
Perkins, J. E. (a).....	Dunnville.....	
Petrol Oil & Gas Co. Ltd.....	414 Bay St., Toronto.....	Dover, Oneida, Onondaga and Tuscarora
Pine Ridge Gas & Oil Co.....	Port Stanley.....	Bayham
Port Colborne-Welland Gas Co. (c).....	Port Colborne.....	Onondaga, Oneida, Seneca and North Cayuga
Povee Gas Syndicate.....	Tillsonburg.....	Canboro
Prairie Gas & Oil Co. Ltd. (N.P.L.).....	350 Bay St., Toronto, 1.....	Dover
Provincial Gas Co. Ltd.....	Fort Erie N.....	Bertie, Crowland, Humberstone and Willoughby
Purcifer & Ferguson.....	Stevensville.....	Humberstone
Queenston Gas & Oil Co., Ltd.....	50 Jarvis St., Fort Erie N.....	S. Walsingham, Oneida, Rainham and Willoughby
Rainham Gas Syndicate.....	Cayuga.....	Rainham
Raydis Oil & Gas Co. Ltd.....	118 King St. W., Chatham.....	Townsend
Reicheld, F. W. (c).....	Jarvis.....	Walpole
Ricker, Arthur (c).....	Canboro.....	Canboro
Rocks Mill Oil & Gas Syndicate.....	510 Huron & Erie Bldg., London.....	South Norwich
Romney Oil & Gas Co.....	18 Toronto St., Toronto.....	Wainfleet
Roth, Frank.....	Ridgeway.....	Bertie
Roth, Harvey (a).....	Dunnville.....	
Rowe, E. P. Estate.....	350 Bay St., Toronto.....	Dover and Raleigh
Royal Gas Syndicate.....	Stevensville.....	Bertie
Salina Gas Co. Ltd.....	317 Queen St., Chatham.....	Tilbury East
Sandusk Gas Syndicate.....	Fisherville.....	Walpole
Sarnia Oil & Gas Co. Ltd.....	204 Atlas Bldg., Toronto.....	Enniskillen
Shank, Ernest.....	Cayuga.....	Oneida and Rainham
Shank Bros. (a).....	Cayuga South.....	
Sherk & Carrothers.....	Sherkston.....	Humberstone
Sherk & Learn.....	Sherkston.....	Humberstone
Sherk & Nagel.....	Stevensville.....	Bertie
Sherk, Perry M.....	Sherkston.....	Humberstone
Shurr, Ivan.....	South Cayuga.....	Rainham
Sider, Andrew & Jesse.....	Stevensville.....	Bertie and Humberstone
Sider, Norman.....	Sherkston.....	Humberstone
Smith & Elide.....	Lowbanks.....	Dunn & Moulton
Smith, Harry B.....	373 Oak Ave., Windsor.....	Romney
South Norwich Gas & Oil Syndicate.....	Norwich.....	South Norwich
Springdale Gas & Oil Co. Ltd.....	Hagersville.....	Walpole
Standard Gas & Oil Syndicate.....	Fisherville.....	Rainham and Walpole
Stanley Gas Syndicate.....	Stratford.....	Walpole
Star Gas Syndicate.....	Ridgeway.....	Bertie
Sterling Gas Co.....	Guelph.....	Walpole
Stevensville Gas & Fuel Co.....	Stevensville.....	Bertie
Stewart & Stewart.....	R.R. 3, Jarvis.....	Walpole
Stewart, Elgin (c).....	R.R. 3, Jarvis.....	Walpole
Stover, F. H. & Associates.....	19 Beatty St., Chatham.....	Raleigh
Stromwell Gas Syndicate.....	R.R. 3, Jarvis.....	Moulton
Stubble & Stubble (a).....	Merlin.....	
Stubble, H. H. & Son (a).....	Chatham.....	
Sundy Gas Wells.....	Dunnville.....	Canboro
Swent, Wm. N. (a).....	Selkirk.....	
Tanner, F. O.....	1650 Penobscot Bldg. Detroit 26, Michigan, U.S.A.....	North Cayuga and Oneida
Till Gas Syndicate.....	Tillsonburg.....	Walpole
Union Gas Company of Canada Ltd.....	Chatham.....	Romney, Tilbury East, Raleigh, Dover, Dawn, Camden Gore, Zone, Moss, Aldborough, Dunn, North Cayuga, Rainham, Seneca, South Cayuga, Walpole, Oneida, Chatham and Malahide.
United Gas & Fuel Co. of Hamilton, Ltd. (b).....		
Victoria Gas Co.....	Dunnville.....	Rainham and Walpole
Victory Oil & Gas Co.....	Huron & Erie Bldg., London.....	Windham
Wainfleet Gas Co. Ltd.....	Box 914 Jamestown, N.Y., U.S.A.....	Wainfleet
Walpole Gas Syndicate.....	Cayuga.....	Walpole, North Cayuga, Seneca and South Walsingham
Walter Gas Syndicate Ltd. (c).....	R.R. 5, Simcoe.....	Walpole, Walsingham South, Woodhouse and Townsend
Warren, Gordon (a).....	R.R. 1, Canboro.....	
Welland County Gas Syndicate.....	Stevensville.....	Bertie
Wentworth Gas Co. Ltd. (b).....	82-84 King St. E., Hamilton.....	
Werner, David (a).....	Fisherville.....	
Western Ontario Natural Gas Co. Ltd.....	907 Pigott Bldg., Hamilton.....	Dunn and Canboro
West Petroleum Ltd.....	372 Bay St., Toronto.....	Romney
Willoughby Gas Syndicate.....	R.R. 1, Chippawa.....	Humberstone

DIRECTORY OF FIRMS—Continued

Firms in the Natural Gas Industry—Concluded

Name	Address	Location of field
SASKATCHEWAN—		
Bata Petroleum Ltd.....	310 Broder Bldg., Regina.....	Unity
Lloydminster Gas Co. Ltd.....	Lloydminster.....	Lloydminster
Northern Utilities Ltd.....	Lloydminster.....	Lloydminster
ALBERTA—		
Ace Royalties Ltd.....	4 Clarence Blk., 122, 8th Ave., W. Calgary..	Turner Valley
Alberta Clay Products Co., Ltd.....	Box 672, Medicine Hat.....	Medicine Hat
Alberta Pacific Royalties Ltd.....	201 Lancaster Bldg., Calgary.....	Turner Valley
Allied Royalties Ltd.....	201 Lancaster Bldg., Calgary.....	Turner Valley
Amalgamated Oils Ltd.....	900 Lancaster Bldg., Calgary.....	Turner Valley
Anglo-Canadian Oil Co. Ltd.....	900 Lancaster Bldg., Calgary.....	Turner Valley
Argus Royalties Ltd.....	900 Lancaster Bldg., Calgary.....	Turner Valley
Arrow Oil Royalties Ltd.....	804 Southam Bldg., Calgary.....	Turner Valley
Associated Oil & Gas Co. Ltd.....	200 Leeson-Lineham Blk., Calgary.....	Turner Valley
Baltac Oils Ltd.....	200 Leeson-Lineham Blk., Calgary.....	Turner Valley
Barsac Royalties Ltd.....	303 Toronto General Trusts Bldg., Calgary.	Turner Valley
Bow Island, Town of (b).....	Bow Island.....	.....
British American Oil Co. Ltd. (e).....	Royal Bank Bldg., King & Yonge Sts., Toronto, Ont.....	.....
British Colonial Oils Ltd.....	1010 Lancaster Bldg., Calgary.....	Turner Valley
British Dominion Oil & Development Corporation Ltd.....	213 Dominion Bank Bldg., Calgary.....	Turner Valley
Calgary Power Co. Ltd.....	244 St. James St., Montreal, Que.....	Bassano
California Standard Co.....	700 Lancaster Bldg., Calgary.....	Conrad and Princess
Calmont Oils Ltd.....	303 Toronto General Trusts Bldg., Calgary.	Turner Valley
Canadian Pacific Railway Co.....	Medicine Hat.....	Medicine Hat
Canadian Western Natural Gas, Light, Heat & Power Co. Ltd.....	215-6th Ave. W., Calgary.....	Brooks
Canadian Western Power & Fuel Co. Ltd.....	3rd St., Redcliff.....	Redcliff
Chinook Oils Ltd.....	232 Loughheed Bldg., Calgary.....	Turner Valley
Coastal Oils Ltd.....	232 Loughheed Bldg., Calgary.....	Turner Valley
Crude Oils Ltd.....	501 Leeson-Lineham Bldg., Calgary.....	Turner Valley
D. & D. Royalties Ltd.....	303 Toronto General Trusts Bldg., Calgary.	Turner Valley
Davies Petroleum Ltd. (N.P.L.).....	409 Lancaster Bldg., Calgary.....	Turner Valley
Deep Oils Ltd.....	501 Leeson & Lineham Bldg., Calgary.....	Turner Valley
Department of National Defence.....	Calgary.....	Suffield
Dominion Glass Co. Ltd.....	1111 Beaver Hall Hill, Montreal, Que.....	Redcliff
East Crest Oil Co. Ltd.....	212 Grain Exchange Bldg., Calgary.....	Turner Valley
Extension Oil Royalties Ltd.....	900 Lancaster Bldg., Calgary.....	Turner Valley
Federated Petroleum Ltd.....	232 Loughheed Bldg., Calgary.....	Turner Valley
Foothills Oil & Gas Co. Ltd.....	119 Sixth Ave. W., Calgary.....	Turner Valley
Four Star Petroleum Ltd.....	232 Loughheed Bldg., Calgary.....	Turner Valley
Franco Oils Ltd.....	Vermilion.....	Vermilion
Franco Public Service Ltd.....	Vermilion.....	Vermilion
Gas & Oil Refineries Ltd. (e).....	301 Lancaster Bldg., Calgary.....	.....
Gunderson Brick & Coal Co. Ltd.....	Redcliff.....	Redcliff
Home Oil Co. Ltd.....	226 Loughheed Bldg., Calgary.....	Turner Valley
Hudson's Bay Oil & Gas Co. Ltd.....	79 Main St., Winnipeg, Man.....	Viking
Imperial Oil Ltd.....	56 Church St., Toronto, Ont.....	Turner Valley
Inland Gas & Oil Co. Ltd.....	36 Dominion Bank Chambers, Edmonton.	Fabyan
Lowery Petroleum Ltd.....	606 Second St. W., Calgary.....	Turner Valley
Major Oil Investments Ltd.....	407 Lancaster Bldg., Calgary.....	Turner Valley
Maple Leaf Milling Co. Ltd.....	Dominion Bank Bldg., Toronto, Ont.....	Medicine Hat
Maple Leaf Oil Co. Ltd.....	608 Stock Exchange Bldg., Vancouver, B.C.	Wainwright
Medicine Hat Brick & Tile Co. Ltd.....	Box 100, Medicine Hat.....	Medicine Hat
Medicine Hat, City of.....	Medicine Hat.....	Medicine Hat
Model Oils Ltd.....	201 Lancaster Bldg., Calgary.....	Turner Valley
Northwestern Utilities Ltd.....	10124-104th St., Edmonton.....	Viking and Kinsella
Ogilvie Flour Mills Co. Ltd.....	Medicine Hat.....	Medicine Hat
Pacific Petroleum Ltd.....	501 Leeson-Lineham Bldg., Calgary.....	Turner Valley
Redcliff Pressed Brick Co. Ltd.....	Redcliff.....	Redcliff
Renown Royalties Ltd.....	201 Lancaster Bldg., Calgary.....	Turner Valley
Royalite Oil Co. Ltd. (e).....	119 Sixth Ave., W., Calgary.....	Turner Valley
Shell Oil Company of Canada Ltd.....	25 Adelaide St. E., Toronto, Ont.....	Jumping Pound
Southwest Petroleum Co. Ltd.....	119-6th Ave., W., Calgary.....	Turner Valley
Suffield Gas Supply.....	Suffield.....	Suffield
Sunset Oils Ltd.....	302 Toronto General Trusts Bldg., Calgary.	Turner Valley
Twin Valley Royalties Ltd.....	804 Southam Bldg., Calgary.....	Turner Valley
Valley Gas Co. Ltd.....	207 Insurance Exchange Bldg., Calgary....	Turner Valley
Vulcan Brown Petroleum Ltd.....	232 Loughheed Bldg., Calgary.....	Turner Valley
Wainwright Gas Co. Ltd.....	36 Dominion Bank Chambers, Edmonton.	Fabyan
Wetaskiwin, City of.....	Wetaskiwin.....	Wetaskiwin
York Oils Ltd.....	414 Pacific Bldg., Vancouver, B.C.....	Turner Valley
NORTHWEST TERRITORIES—		
Imperial Oil Co. Ltd.....	56 Church St., Toronto, Ont.....	Fort Norman

DIRECTORY OF FIRMS—Continued

Crude Oil Producers

Name	Address	Location of field
NEW BRUNSWICK— New Brunswick Gas & Oilfields Ltd.....	Moncton.....	Stoney Creek
ONTARIO (*)—		
Anderson, C. W. (b).....	931 College St., Toronto.....	Metcalfe
Austin, Gordon.....	Bothwell.....	Orford
Barnes, Amos.....	Box 552, Petrolia.....	Petrolia and Enniskillen
Barnes Bros.....	Petrolia.....	Petrolia and Enniskillen
Barnes, Henry.....	Oil Springs.....	Petrolia and Enniskillen
Byers, Irving.....	Oil Springs.....	Petrolia and Enniskillen
Byers Bros.....	Oil Springs.....	Petrolia and Enniskillen
Canadian Oil Companies Ltd.....	Terminal Bldg., Toronto 1.....	Petrolia and Enniskillen
Carter, Clarence M. (a).....	Wallaceburg.....	
Chandler, H. & C.....	829 East "D" St., Iron Mountain, Michigan, U.S.A.....	Petrolia and Enniskillen
Cole, W. J.....	Box 91, Petrolia.....	Petrolia and Enniskillen
Collins, Matt, Estate of.....	Petrolia.....	Petrolia and Enniskillen
Corey, Harrison.....	Petrolia.....	Petrolia and Enniskillen
Dean, Cecil.....	Petrolia.....	Petrolia and Enniskillen
Demaray, C. (a).....	Kerrwood.....	
Dennis, Mrs. L.....	Oil Springs.....	Petrolia and Enniskillen
Domestic Gas & Oil Co. Ltd.....	Blyth.....	Zone
Dominion Petroleum Co.Ltd. (b).....	R.R. 2, Glencoe.....	Mosa
Donald, George.....	Oil Springs.....	Petrolia and Enniskillen
Duncan, Mrs. E.....	Petrolia.....	Petrolia and Enniskillen
Dutton Oil & Gas Ltd.....	25 Melinda St., Toronto 1.....	Dunwich
Earl, Sydney (b).....	Kerrwood.....	Metcalfe
Edward, F. H.....	Box 125, Petrolia.....	Petrolia and Enniskillen
Fairbank, J. H. Estate.....	Petrolia.....	Petrolia and Enniskillen
Gray, Mabel.....	Petrolia.....	Petrolia and Enniskillen
Heal, Andrew.....	Box 264, Watford.....	Warwick
High Grade Natural Gas Co. Ltd.....	215 King St. W., Chatham.....	Dover
Hillis, F. E.....	Oil Springs.....	Petrolia and Enniskillen
Holmes, D. A. (a).....	Petrolia.....	
Holmes, E. B.....	Bothwell.....	Zone
Howlett, Fred W. & Sons Ltd.....	Petrolia.....	Petrolia and Enniskillen
Hussey, Wm. J. (a).....	Petrolia.....	
Imperial Oil Ltd. (Eastern Canada Exploration)	56 Church St., Toronto.....	Petrolia and Enniskillen
Irving, R.....	Petrolia.....	Petrolia and Enniskillen
Irwin, Foster.....	Petrolia.....	Petrolia and Enniskillen
Kells, E. E.....	Petrolia.....	Petrolia and Enniskillen
Kelly, J. E.....	Petrolia.....	Petrolia and Enniskillen
Kerr, J. & J. Co.....	Petrolia.....	Petrolia and Enniskillen
Kodyen, E.....	Bothwell.....	Zone
Lennan, Lloyd A.....	Petrolia.....	Petrolia and Enniskillen
Leverton, Wm.....	Bothwell.....	Zone
Lewis, Wm. and Laura.....	Oil Springs.....	Petrolia and Enniskillen
Lewis & Byers.....	Oil Springs.....	Petrolia and Enniskillen
Lidster, Harold.....	Wallacetown.....	Dunwich
MacGillivray, Mrs. M.....	Oil Springs.....	Petrolia and Enniskillen
Marcus, Andrew.....	Bothwell.....	Zone
Marcus, Louis.....	Wallacetown.....	Dunwich
McCrie, R. D.....	Bothwell.....	Zone
McCutcheon, Mrs. A.....	Oil Springs.....	Petrolia and Enniskillen
McKillop, Wm. & Son (a).....	Box 102, Hamilton.....	
McMillan, & Warwick.....	Bothwell.....	Orford
McPherson, Ross (a).....	851 Tuscarora St., Windsor.....	
Mitchell, Charles.....	Oil Springs.....	Petrolia and Enniskillen
Mitchell, R.....	Oil Springs.....	Petrolia and Enniskillen
Morningstar, Geo.....	Oil Springs.....	Petrolia and Enniskillen
Morningstar, H.....	Oil Springs.....	Petrolia and Enniskillen
Ontario Lands & Oil Co.....	Petrolia.....	
Pope, H. O.....	Bothwell.....	Zone
Pope, Wm.....	Bothwell.....	Zone
Prairie Gas & Oil Co. Ltd. (N.P.L.).....	350 Bay St., Toronto 1.....	Dover
Rowe, E. P. Estate.....	350 Bay St., Toronto 1.....	Dover and Raleigh
Saroline Oil Co. Ltd.....	Petrolia.....	Petrolia and Enniskillen
Shain, Viola M.....	Petrolia.....	Petrolia and Enniskillen
Shaw, O. (a).....	Thamesville.....	
Slack, C. M.....	Petrolia.....	Petrolia and Enniskillen
Stover & Rawlings (a).....	19 Beatty St., Chatham.....	
Stubble & Stubble (a).....	Merlin.....	
Sutherland, B.....	Petrolia.....	Petrolia and Enniskillen
Thompson, A.....	Box 326, Petrolia.....	Petrolia and Enniskillen
Tunks, Jas.....	Bothwell.....	Zone
Union Gas Company of Canada Ltd.....	Fifth St., Chatham.....	Dawn, Dover and Zone
Warwick, J.....	Oil Springs.....	Orford
Warwick, Joseph.....	Oil Springs.....	Petrolia and Enniskillen
Wilson-Sullivan Development Co. (b).....	112 S. Christina St., Sarnia.....	Adelaide and Warwick
Windover, Wm. (a).....	Sarnia.....	

(*) Producers of 300 barrels or more during the year.

(a) Driller only.

(b) Producer and driller.

DIRECTORY OF FIRMS—Continued

Crude Oil Producers—Continued

Name	Address	Location of field
ONTARIO—Concluded		
Winnett, J. W. G.	418½ Talbot St., London	Orford, Mosa and Zone
Woodward, Wm.	Box 103, Oil Springs	Petrolia and Enniskillen
Yerks, Frank	Petrolia	Petrolia and Enniskillen
SASKATCHEWAN—		
Community Petroleum Ltd.	618 McCallum-Hill Bldg., Regina	Lloydminster
National Petroleum Syndicate	Tisdale	Lloydminster
S. A. C. Oils Ltd.	720-475 Howe St., Vancouver, B.C.	Lloydminster
ALBERTA—		
Ace Royalties Ltd.	4 Clarence Blk., 122-8th Ave. W. Calgary	Turner Valley
Admiral Oils Ltd.	55 Canada Life Bldg., Calgary	Hay Lake
Alberta Oil Incomes Ltd.	301 Lancaster Bldg., Calgary	Turner Valley
Alberta Pacific Royalties Ltd.	201 Lancaster Bldg., Calgary	Turner Valley
Allied Royalties Ltd.	201 Lancaster Bldg., Calgary	Turner Valley
Amalgamated Oils Ltd.	900 Lancaster Bldg., Calgary	Turner Valley
Anglo-Canadian Oil Co. Ltd.	900 Lancaster Bldg., Calgary	Turner Valley
Argus Royalties Ltd.	900 Lancaster Bldg., Calgary	Turner Valley
Arrow Oil Royalties Ltd.	804 Southam Bldg., Calgary	Turner Valley
Associated Oils & Gas Co. Ltd.	200 Leeson-Lineham Bldg., Calgary	Turner Valley
Baltac Oils Ltd.	200 Leeson-Lineham Bldg., Calgary	Turner Valley
Barsac Royalties Ltd.	303 Toronto General Trusts Bldg., Calgary	Turner Valley
Baxter Lake Oils Ltd.	403 Lancaster Bldg., Calgary	Wainwright
Bethwain Oils Ltd.	73 Adelaide St. W., Toronto, Ontario	Wainwright
Borradaile Oils Ltd.	330 Bay St., Toronto 1, Ontario	Vermilion and Lloydminster
British American Oil Co. Ltd. (b)	Royal Bank Bldg., King and Yonge Sts., Toronto, Ontario	
British Colonial Oils Ltd.	1010 Lancaster Bldg., Calgary	Turner Valley
British Dominion Oil & Development Corp. Ltd.	213 Dominion Bank Bldg., Calgary	Turner Valley
British Empire Oil Developments Ltd.	401 Leeson-Lineham Bldg., Calgary	Turner Valley
California Standard Co.	700 Lancaster Bldg., Calgary	Conrad and Princess
Calmont Oils Ltd.	303 Toronto General Trusts Bldg., Calgary	Turner Valley
Calwin Royalties Ltd.	301 Lancaster Bldg., Calgary	Turner Valley
Cannar Oils Ltd.	360 McGill St., Montreal, Que.	Vermilion
Century Royalties Ltd.	102 Bank of Commerce Bldg., Calgary	Turner Valley
Chinook Oils Ltd.	232 Lougheed Bldg., Calgary	Turner Valley
Clonmel Petroleum Ltd.	330 Bay St., Toronto, Ontario	Turner Valley
Coastal Oils Ltd.	232 Lougheed Bldg., Calgary	Turner Valley
Command Oils Ltd.	4 Clarence Blk., 122-8th Ave. W., Calgary	Turner Valley
Commoil Ltd.	4 Clarence Blk., 122-8th Ave. W., Calgary	Turner Valley
Commonwealth Drilling Co. Ltd. (a)	4 Clarence Blk., 122-8th Ave. W., Calgary	
Continental Oil Company of Canada Ltd.	407 Lancaster Bldg., Calgary	Turner Valley
Crest Royalties Ltd.	201 Lancaster Bldg., Calgary	Turner Valley
Crude Oils Ltd.	501 Leeson-Lineham Bldg., Calgary	Turner Valley
D & D Royalties Ltd.	303 Toronto General Trusts Bldg., Calgary	Turner Valley
Dalhousie Oil Co. Ltd.	119-6th Ave. W., Calgary	Turner Valley
Davies Petroleum Ltd. (N.P.L.)	409 Lancaster Bldg., Calgary	Turner Valley
Deep Oils Ltd.	501 Leeson-Lineham Bldg., Calgary	Turner Valley
De Koch, Wm. G.	Box 268, Lloydminster	Lloydminster
Director Royalties Ltd.	119 Sixth Ave. W., Calgary	Turner Valley
Drillers & Producers Ltd.	203 Wilson Electric Bldg., Calgary	Turner Valley
East Crest Oil Co. Ltd.	212 Grain Exchange Bldg., Calgary	Turner Valley
Edmonton-Wainwright Oils Ltd.	8 McDougall Court, Edmonton	Wainwright
Empire Petroleum Ltd.	501 Leeson-Lineham Bldg., Calgary	South Princess
Extension Oil Royalties Ltd.	900 Lancaster Bldg., Calgary	Turner Valley
Federated Petroleum Ltd.	232 Lougheed Bldg., Calgary	Turner Valley
Foothills Oil & Gas Co. Ltd.	119 Sixth Ave. W., Calgary	Turner Valley
Four Star Petroleum Ltd.	232 Lougheed Bldg., Calgary	Turner Valley
Franco Oils Ltd.	Vermilion	Vermilion
Franco Public Service Ltd.	Vermilion	Vermilion
Gas & Oil Refineries Ltd. (b)	301 Lancaster Bldg., Calgary	
Gem Royalties Ltd.	403 Lancaster Bldg., Calgary	Turner Valley
Grande Prairie Petroleum Ltd.	36 Toronto St., Toronto, Ontario	Vermilion
Granville Oils Ltd.	4 Clarence Blk., 122-8th Ave., Calgary	Turner Valley
Great Bend Oils Ltd.	36 Toronto St., Toronto, Ontario	Vermilion
Harris Wells Ltd.	201 Lancaster Bldg., Calgary	Turner Valley
Highwood-Sarcee Oils Ltd.	614 Lancaster Bldg., Calgary	Turner Valley
Hollingsworth Oils Ltd.	210 Toole Peet Bldg., Calgary	Vermilion
Home Oil Co. Ltd.	226 Lougheed Bldg., Calgary	Turner Valley
Hudson's Bay Oil & Gas Co. Ltd.	Hudson's Bay House, 79 Main St., Winnipeg, Manitoba	Viking
Imperial Oil Ltd.	56 Church St., Toronto, Ontario	Turner Valley
Independent Royalties Ltd.	403 Lancaster Bldg., Calgary	Turner Valley
Kamalta Well Operators Ltd.	201 Lancaster Bldg., Calgary	Turner Valley
Lion Oil Producing Co.	328 (a)—8th Ave. W., Calgary	Turner Valley
Lowery Petroleum Ltd.	606 Second St. W., Calgary	Turner Valley
Major National Oils Ltd.	407 Lancaster Bldg., Calgary	Turner Valley
Major Oil Investments Ltd.	407 Lancaster Bldg., Calgary	Turner Valley

(a) Drilling only.

(b) Operates an absorption plant.

DIRECTORY OF FIRMS—C continued

Crude Oil Producers—Concluded

Name	Address	Location of field
ALBERTA—Concluded		
Maryland Petroleum Ltd.....	111 Ardern Blk., Calgary.....	Turner Valley
McDougall-Segur Exploration Company of Canada Ltd.....	405 West 8th Ave., Calgary.....	Turner Valley
Mercury Oils Ltd.....	301 Lancaster Bldg., Calgary.....	Turner Valley
Mid Continent Oil & Gas Ltd.....	213 Dominion Bank Bldg., Calgary.....	Conrad
Miracle Oils Ltd.....	301 Lancaster Bldg., Calgary.....	Turner Valley
Miracle Royalties Ltd.....	301 Lancaster Bldg., Calgary.....	Turner Valley
Model Oils Ltd.....	201 Lancaster Bldg., Calgary.....	Turner Valley
Model Spooner Syndicate.....	717 Lancaster Bldg., Calgary.....	Turner Valley
National Petroleum Corp. Ltd.....	401 Leeson-Lineham Bldg., Calgary.....	Turner Valley
Newfield Royalties Ltd.....	232 Lougheed Bldg., Calgary.....	Turner Valley
Okalta Oils Ltd.....	Renfrew Bldg., Calgary.....	Turner Valley
Pacific Petroleum Ltd.....	501 Leeson-Lineham Bldg., Calgary.....	Turner Valley
Ponalta Syndicate.....	209 Agency Bldg., Edmonton.....	Lloydminster
Princeville Petroleum Ltd.....	720 Stock Exchange Bldg., Vancouver, B.C.....	Vermilion
P. S. & D. Oils Ltd.....	308 Lancaster Bldg., Calgary.....	Denhart
Regal Royalties Ltd.....	401 Leeson-Lineham Bldg., Calgary.....	Turner Valley
Renown Royalties Ltd.....	201 Lancaster Bldg., Calgary.....	Turner Valley
Reward Spooner Model Ltd.....	717 Lancaster Bldg., Calgary.....	Turner Valley
Royal Canadian Oils Ltd.....	403 Lancaster Bldg., Calgary.....	Turner Valley
Royal Crest Petroleum Ltd.....	232 Lougheed Bldg., Calgary.....	Turner Valley
Royalite Model Oil Co. Ltd.....	201 Lancaster Bldg., Calgary.....	Turner Valley
Royalite Oil Co. Ltd. (e).....	119 Sixth Ave. W., Calgary.....	Turner Valley
S.A.C. Oils (Alberta) Ltd.....	720-475 Howe St., Vancouver, B.C.....	Lloydminster
Saskatchewan Oils Ltd.....	Box 32, Indian Head, Saskatchewan.....	Vermilion
Share Royalties Ltd.....	Elks Bldg., Calgary.....	Turner Valley
Shell Oil Company of Canada Ltd.....	25 Adelaide St. E., Toronto, Ontario.....	Jumping Pound
Silverdale Trust Ltd.....	c/o Royal Trust Co., Edmonton.....	Lloydminster
Southwest Petroleum Co. Ltd.....	119-6th Ave. W., Calgary.....	Turner Valley
Sovereign Royalties Ltd.....	317 Alberta Corner, Calgary.....	Turner Valley
Standard Oil Company of British Columbia Ltd.....	906 Marine Bldg., Vancouver, B.C.....	Taber
Sterling Royalties Ltd.....	102 Bank of Commerce, Calgary.....	Turner Valley
Sunburst Oil Co. Ltd.....	800 Lancaster Bldg., Calgary.....	Turner Valley
Sunset Oils Ltd.....	302 Toronto General Trusts Bldg., Calgary.....	Turner Valley
Three Point Petroleum Ltd.....	232 Lougheed Bldg., Calgary.....	Turner Valley
Turner Valley Royalties Ltd.....	232 Lougheed Bldg., Calgary.....	Turner Valley
Twin Valley Oil Royalties Ltd.....	804 Southam Bldg., Calgary.....	Turner Valley
United Assets Ltd.....	232 Lougheed Bldg., Calgary.....	Turner Valley
Vanpeg Royalties Ltd.....	301 Lancaster Bldg., Calgary.....	Turner Valley
Vulcan Brown Petroleum Ltd.....	232 Lougheed Bldg., Calgary.....	Turner Valley
Wain-Con Oils Ltd.....	431 Tegler Bldg., Edmonton.....	Wainwright
Wainwright Petroleum Ltd.....	10625-99 Ave., Edmonton.....	Wainwright
Westside Royalties Ltd.....	232 Lougheed Bldg., Calgary.....	Turner Valley
Winalta Royalties Ltd.....	301 Lancaster Bldg., Calgary.....	Turner Valley
York-Oils Ltd.....	414 Pacific Bldg., Vancouver, B.C.....	Turner Valley
NORTHWEST TERRITORIES—		
Imperial Oil Ltd. (Norman Wells).....	56 Church St., Toronto, Ontario.....	Fort Norman

(e) In addition to operating and drilling wells in the Turner Valley field this company operates an absorption plant.

OTHER NON-METAL MINING INDUSTRIES

DIRECTORY OF FIRMS—Continued

Canadian Asbestos Mining Industry

Name of firm	Head office or General office	Location of mine
Asbestos Corporation Ltd.....	Thetford Mines, Quebec.....	Thetford Mines, Quebec Black Lake, Quebec Coleraine, Quebec
Asbestos Crude & Fibre Mines Ltd. (*).....	1410 Stanley St., Montreal, Quebec.....	Coleraine, Quebec
Bell Asbestos Mines Ltd.....	Thetford Mines, Quebec.....	Thetford Tp., Quebec
Canadian Johns-Manville Co. Ltd.....	Sun Life Bldg., Montreal, Quebec.....	Asbestos, Quebec
Conwest Exploration Co. Ltd. (*).....	85 Richmond St., Toronto, Ontario.....	Coleraine Tp., Quebec
Carswell, L. M.....	Renfrew, Ontario.....	Blythfield Tp., Quebec
Flintkote Mines Ltd.....	283 Roxborough St. E., Toronto, Ontario.....	Thetford Mines, Quebec
International Asbestos Co. Ltd. (*).....	66 Wellington St. N., Sherbrooke, Quebec.....	St. Adrien de Ham, Quebec
Johnson's Company.....	Thetford Mines, Quebec.....	Thetford Mines, Quebec Coleraine, Quebec
Nicolet Asbestos Mines Ltd.....	820 Transportation Bldg., Montreal, Quebec.....	Norbestos, Quebec
Quebec Asbestos Corp. Ltd.....	East Broughton Station, Quebec.....	East Broughton Station, Quebec

(*) Carried on exploration or development work only.

Feldspar and Quartz Mining Industry

- | | |
|--------------------------|--------------------------------|
| (a) Produces silica | (e) Produces nepheline syenite |
| (b) Produces feldspar | (f) Produces grinding pebbles |
| (c) Operates a mill | (g) Contractor |
| (d) Also produces kaolin | (h) Produces scapolite |

Name of firm	Head office address	Location of mine or mill
NOVA SCOTIA—		
Nairn, J. (a).....	24 Whitney Ave., Sydney.....	Leitch Creek
Stevens, Archie (a).....	11 McKenzie St., Glace Bay.....	Melford
QUEBEC—		
Belval, T. (b).....	Farnham.....	Farnham
Bigelow, Gordon (b) (g).....	Glen Almond.....	Derry Tp.
Bigelow, Robt. & Sons (b).....	Buckingham.....	Portland East Tp.
Bon Ami Ltd. (b) (c).....	13719 Notre Dame St. E., Montreal.....	Montreal
Buckingham Feldspar Inc. (b).....	276 St. James St. W., Montreal.....	Buckingham
Buckingham Mining Corp. (b).....	1502 Athlone Rd., Montreal.....	Buckingham
Canada China Clay & Silica Ltd. (a) (d).....	1600 Royal Bank Bldg., Toronto, Ont.....	Amherst Tp.
Canadian Carborundum Co. Ltd. (a) (c).....	Box 57, Niagara Falls, Ont.....	St. Canut
Canadian Flint & Spar Co. Ltd. (a) (b) (c).....	Room 512 Victoria Bldg., Ottawa, Ont.....	Buckingham
Consumers Industrial Minerals Ltd. (b).....	8661 Drolet, Montreal.....	Montcalm Co.
Feldspar Products Ltd. (b).....	1224 St. Catherine St., Montreal.....	Papineau
Hill, Wm. (a) (f).....	Glen Almond.....	Buckingham Tp.
Industrial Silica Corp. (a).....	Room 408—266 St. James St., Montreal.....	Roberval Co.
Lafrance, Ovila (a).....	Angers.....	Buckingham Tp.
Law, S. H. (a) (b).....	Room 28, 14 Toronto St., Toronto, Ont.....	Derry Tp.
McGill, Lawrence (h).....	Pointe-au-Chêne.....	Grenville
Montpetit, Euclide (a).....	Melocheville.....	Beauharnois Co.
Morin, A. H. (a) (b).....	Box 3, Buckingham.....	Buckingham Tp.
St. Lawrence Alloys & Metals Ltd. (a) (c).....	Beauharnois.....	Beauharnois Co.
ONTARIO—		
American Nepheline Corp. (e).....	Lakefield.....	Methuen Tp.
Bancroft Mica & Stone Products (b) (c).....	Bancroft.....	Faraday Tp.
Bathurst Feldspar Mines Ltd. (b).....	Room 508—21 King St. E., Toronto.....	Bathurst Tp.
Buffalo Ankerite Gold Mines Ltd. (f).....	Box 533, South Porcupine.....	Deloro Tp.
Canspar Mines Ltd. (b).....	100 Adelaide St. W., Toronto.....	Barry's Bay
Conger Feldspar Mining Co. Ltd. (b).....	10 Adelaide St. E., Toronto.....	Conger Tp.
Dominion Mines & Quarries Ltd. (a) (c).....	Canada Life Bldg., Toronto.....	Killarney
Frontenac Floor & Wall Tile Co. Ltd. (b) (c).....	Kingston.....	Kingston
International Nickel Co. of Canada Ltd. (a).....	Copper Cliff.....	Lawson Tp.
Kingston Silica Mines Ltd. (a) (c).....	R. R. No. 1, Kingston.....	Pittsburg Tp.
Manitoulin Quartzite Co. (a) (c).....	732 Langlois Ave., Windsor.....	Manitoulin Island
Quartz Crystals Mining Co. of Canada Ltd. (a).....	712 Federal Bldg., Toronto.....	Lansdowne Tp.
Verona Rock Products Ltd. (a) (b).....	330 Bay St., Toronto.....	Verona
Wright and Co. (a) (c).....	960 Queen St., Sault Ste. Marie.....	Deroche Tp.
SASKATCHEWAN—		
Hudson Bay Mining & Smelting Co. (a).....	Flin Flon, Man.....	
BRITISH COLUMBIA—		
Consolidated Mining & Smelting Co. Ltd. (a).....	Trail, B.C.....	Fairview

DIRECTORY OF FIRMS—Continued

Gypsum Mining Industry

Name of firm	Head office address	Plant location
NOVA SCOTIA—		
Canadian Gypsum Co. Ltd.....	170 Bloor St. W., Toronto Ont.....	Wentworth
Conn. Adamant Plaster Co.....	10 River St., New Haven, Conn., U.S.A.....	Cheverie
Gypsum, Lime & Alabastine, Canada, Ltd. (idle)	Paris, Ont.....	Baddeck Bay
National Gypsum (Canada) Ltd.....	325 Delaware Ave., Buffalo, N. Y., U.S.A....	Walton, Dingwall
Victoria Gypsum Co. Ltd.....	Little Narrows.....	Little Narrows
Windsor Plaster Co. Ltd.....	Windsor.....	Brooklyn, Hants Co.
NEW BRUNSWICK—		
Canadian Gypsum Co. Ltd.....	170 Bloor St. W., Toronto Ont.....	Hillsborough
ONTARIO—		
Canadian Gypsum Co. Ltd.....	170 Bloor St. W., Toronto.....	Hagersville
Cayuga Gypsum Co. Ltd.....	Caledonia.....	North Cayuga Tp.
Gypsum, Lime & Alabastine, Canada, Ltd.....	Paris.....	Caledonia
MANITOWA—		
Gypsum, Lime & Alabastine, Canada, Ltd.....	Paris, Ont.....	Gypsumville
Western Gypsum Products Ltd.....	503 McArthur Bldg., Winnipeg.....	Amaranth
BRITISH COLUMBIA—		
Gypsum, Lime & Alabastine, Canada, Ltd.....	Paris, Ont.....	Falkland
Western Gypsum Products Ltd.....	McArthur Bldg., Winnipeg, Man.....	Mayook

The Iron Oxide Mining Industry

Name of firm	Head office address	Location of plant or mine
QUEBEC—		
Argall, Mrs. Thomas H.....	Pointe-du-Lac.....	Pointe-du-Lac
Girardin, Chas. D.....	Yamachiche.....	Almaville-en-Haut
Lafrénère, Philias.....	St-Louis-de-France.....	St-Louis-de-France
The Sherwin-Williams Co. of Canada Ltd. (*)	2875 Centre St., Montreal.....	Red Mill, Champlain Co.
Vennes, Wm.....	90 6 e Ave., Grand'Mère.....	St-Adelphe
BRITISH COLUMBIA—		
Scott, F. B.....	Squamish.....	Alta Lake

(*) Produces refined grades.

The Canadian Mica Mining Industry

Name of operator	Head office address	Location of mine or plant
QUEBEC—		
Blackburn Bros.....	85 Sparks St., Ottawa, Ontario.....	Cantley and Perkins
Chenier, A.....	Cantley.....	Hull Tp.
Cross, W. C.....	209 Bridge St., Hull.....	Hull Tp.
Delisle, Jos.....	Mistassini.....	Lac Noir
Dessève, J. L.....	106 Jeanne d'Arc, Hull.....	Lauretta
Fleury Mica Mine Ltd.....	Chibaugamau.....	Rinfret
Gauthier, J. B.....	C. P. 226, Buckingham.....	Dinholm
McNeely, Jas.....	114 Harmer Ave., Ottawa, Ontario.....	Cawood Tp.
Mica Co. of Canada, Ltd.....	2 Lois St., Hull.....	
Morin, F.....	3644 Bergerac, Montreal Nord.....	Blake
Perkins Mills Mica Co. Ltd.....	360 St. James St., W., Montreal.....	Perkins Mills
Pink Lake Mica Mines Ltd.....	74 King St. E., Toronto, Ontario.....	Hull Tp.
Poirier, A.....	Wilson's Corner.....	Wakefield
Poirier, Wm.....	Wilson's Corner.....	Wakefield
Renaud, J.....	Perkins Mills.....	
Sargent, F. G.....	Cascades.....	Hull Tp.
Suzorite Co. Ltd.....	907 Dominion Square Bldg., Montreal.....	Suzor Tp.
Trudeau Mineral Exploration.....	Old Chelsea.....	
Wallingford, E.....	Perkins.....	Templeton
Wallingford, Wm. & A.....	Gatineau Pointe.....	Perkins Mills
ONTARIO—		
Green, W. E. & Bro.....	Perth Road.....	Ottie Lake
Lee, W. W.....	Westport.....	Bedford
Loughborough Mining Co. Ltd.....	Sydenham.....	Frontenac
Purdy Mica Mines Ltd.....	184 Bay St., Toronto.....	Eau Claire
Sydenham Mining Co. Ltd.....	Box 252, Kingston.....	Loughborough
Watts, R. W.....	21 Isabella St., Perth.....	Perth
BRITISH COLUMBIA—		
Fairey & Co.....	661 Taylor St., Vancouver.....	Vancouver

DIRECTORY OF FIRMS—Continued

The Canadian Peat Industry

(*) Active but no shipments made.

(a) Produces moss.

(b) Produces peat fuel.

(c) Produces humus.

(d) Inactive in 1946.

Name of firm	Head office address	Location of bog or plant
NEW BRUNSWICK—		
Atlantic Peat Moss Co. Ltd. (*)	513 Rachel St. E., Montreal, Que.	Gloucester
Fafard Peat Moss Co. (a)	Shippegan	Shippegan
Western Peat Co. Ltd. (*)	Box 699, New Westminster, B.C.	Shippegan
QUEBEC—		
Allied Peat Moss Corp. (a)	Cacouna	Cacouna
Beausejour Peat Moss (a)	St-Romald	St-Lambert
Bourque & Fils (a)	St-Marc-des-Carrières	St-Marc-des-Carrières
Excel Peat Ltd. (a)	319, rue Lafontaine, Rivière-du-Loup	Isle-aux-Coudres
Maple Leaf Peat Ltd. (a)	303A Lafontaine St., Rivière-du-Loup	St-Antoine
R. & B. Moss & Peat Products (a)	Waterville	Waterville
Michaud, J. F. A. (a)	Isle Verte	Isle-Verte
Premier Peat Moss Ltd. (a)	Isle Verte	Isle-Verte
Perfect Peat Products (a)	303 Lafontaine St., Rivière-du-Loup	St-Antoine
Quebec Peat Moss Co. (a)	St-Guillaume-d'Upton	St-Bonaventure
Reid, Dr. Henri (a)	Mont-Joli	Pointe-au-Père
Roy, Romeo (a)	St-Ulric	St-Ulric
Roy, Louis (a)	Rivière-Blanche	Rivière-Blanche
Saguenay Peat Moss Co. Ltd. (a)	187 Jacques-Cartier, Chicoutimi	Bagot Tp.
Senneterre Peat & Moss Mines Ltd. (a)	Senneterre	Senneterre
Tourbières Rivière-Ouelle (a)	2, Côte d'Abraham, Quebec	Rivière-Ouelle
Tourbière de Pointe-au-Père (a)	Mont-Joli	Pointe-au-Père
Trump Peat Products Ltd. (a)	Rivière-du-Loup	Rivière-du-Loup
ONTARIO—		
Arctic Peat Moss Corp. Ltd. (a)	200 Sterling Securities Bldg., Winnipeg, Man.	Crozier
Canadian Humus Products (c)	Suite 1010, 100 Adelaide St. W., Toronto	Beverly Tp.
Erie Peat Ltd. (a)	Box 500, Port Colborne	Wainfleet Tp.
Leasa Peat Works (a) (b)	106 Britannia St., Stratford	Ellice Tp.
Polar Bear Peat Moss Products (a)	Fort Frances	Pinewood
Pringle, J. A. (*) (a)	Arden	Arden
MANITOBA—		
Winnipeg Supply & Fuel Co. Ltd. (a)	812 Boyd Bldg., Winnipeg	Shelley
McCabe Bros. Grain Co. Ltd. (a)	980 Grain Exchange Bldg., Winnipeg	Shelley
BRITISH COLUMBIA—		
Acme Peat Products Ltd. (a)	789 W. Pender St., Vancouver	Pitt Meadows
Alouette Peat Products Ltd. (a)	Pitt Meadows	Pitt Meadows
B.C. Peat Company Ltd. (a)	302 Royal Bank Bldg., Vancouver	Ladner
Bymerood Peat Farm (a)	2707 McKay Ave., New Westminster	Burnaby
Coast Peat Co. Ltd. (a)	736 Granville St., Vancouver	Burnaby
Columbia Products Ltd. (a)	Box 699, New Westminster	Lulu Island
Commercial Peat Co. Ltd. (d)	R.R. 2, Eburne	Lulu Island
Excelsior Peat Ltd. (a)	7675 Olser Ave., Vancouver	Burnaby
Industrial Peat Co. (a)	Box 329, New Westminster	Delta Municipality
Lulu Island Peat Co. Ltd. (a)	R.R. 2, Vancouver	Richmond Tp.
Nielsen, E. and M. F. (a)	R.R. 2, Vancouver	Westminster
Northern Peat Moss Co. Ltd. (a)	R.R. 2, Vancouver	Richmond Tp.
Pacific Peat Products Ltd. (a)	811 Hall Bldg., Vancouver	New Westminster
Richmond Peat Products Limited (a)	R.R. 2, Vancouver	New Westminster
Western Peat Co. Ltd. (a)	Box 699, New Westminster	Lulu Island

The Salt Industry

Name of firm	Head or executive office	Location of plant
NOVA SCOTIA—		
Malagash Salt Co. Limited	196 Provost St., New Glasgow	Cumberland Co.
ONTARIO—		
Brunner, Mond Canada, Ltd.	Canadian Bank of Commerce Bldg., Toronto	Essex Co.
Canadian Industries Limited	Box 10, Montreal, Que.	Essex Co.
Goderich Salt Co. Ltd.	Box 577, Goderich	Goderich
Sifto Salt Co. Ltd.	2240 Sun Life Bldg., Montreal, Que.	Sarnia
Warwick Pure Salt Co. Ltd.	R.R. 5, Watford	Lambton Co.
Purity Flour Mills Ltd.	287 MacPherson Ave., Toronto	Goderich
MANITOBA—		
Canadian Industries Ltd.	Box 10, Montreal, Que.	Neepawa
ALBERTA—		
Industrial Minerals Ltd.	2240 Sun Life Bldg., Montreal, Que.	Waterways

DIRECTORY OF FIRMS—Continued

The Talc and Soapstone Industry

Name of firm	Head office address	Location of plant or mine
QUEBEC—		
Baker Mining & Milling Co. Ltd.....	4010 St. Catherine St. W., Montreal.....	Highwater
Broughton Soapstone & Quarry Co. Ltd.....	Broughton Station.....	Broughton
Fortin, Charles.....	Robertsonville.....	Thetford Tp.
Pharo, L. C. Co. Ltd.....	187 St. Maurice St., Thetford Mines.....	Leeds Tp.
ONTARIO—		
Canada Talc Limited.....	Madoc.....	Huntingdon Tp.

THE MISCELLANEOUS NON-METAL MINING INDUSTRIES

(*) Active but not producing.

(†) Recover sulphur compounds from smelter gas.

Name of operator	Head office address	Location of plant
Barite—		
NOVA SCOTIA—		
Canadian Industrial Minerals Ltd.....	Walton.....	Walton
ONTARIO—		
Woodhall Mines Ltd.....	347 Bay St., Toronto.....	Langmuir
BRITISH COLUMBIA—		
Mountain Minerals Ltd.....	Box 273, Lethbridge, Alberta.....	Golden M. D.
Brucite—		
QUEBEC—		
Aluminum Company of Canada Ltd.....	Sun Life Bldg., Montreal.....	Wakefield
Corundum—		
ONTARIO—		
Craigmont Corundum Project.....	Dept. of Reconstruction, Ottawa.....	Raglan Tp.
Diatomite—		
NOVA SCOTIA—		
Wightman, Mrs. G. W.....	Smiths' Cove.....	Digby Co.
BRITISH COLUMBIA—		
Fairey and Co.....	661 Taylor St., Vancouver.....	Cariboo M. D., Vancouver
Fluorspar—		
ONTARIO—		
Dominion Magnesium Ltd.....	87 Yonge St., Toronto.....	Cobden
Gilman, R. T.....	13 Government Road W., Kirkland Lake...	Madoc Dist.
Millwood Fluorspar Mines Ltd.....	Box 206, Madoc.....	Madoc Dist.
Reliance Fluorspar Mining Synd. Ltd.....	Madoc.....	Huntingdon Tp.
Stocklosar, Chas. A.....	Box 198, Madoc.....	Huntingdon Tp.
Tops Mining Synd. Ltd. (*).....	c/o W. E. Clark, Harcourt.....	Cardiff Tp.
Garnet—		
ONTARIO—		
Niagara Garnet Co.....	c/o Wm. A. Yarwood, 8573 Krull Parkway, Niagara Falls, N.Y., U.S.A.	River Valley
Graphite—		
ONTARIO—		
Frobisher Exploration Co. Ltd.....	Black Donald Mines.....	Brougham Tp.
Grindstones—		
NEW BRUNSWICK—		
Read, H. C.....	Bathurst.....	Stonehaven
Bay of Chaleur Grindstone Co.....	Clifton.....	Clifton

THE MISCELLANEOUS NON-METAL MINING INDUSTRIES—*Concluded*

DIRECTORY OF FIRMS—Continued

Name of firm	Head office address	Location of plant
Lithium Minerals—		
MANITOBA—		
Lithium Corp. of Canada Ltd. (*).....	403 Avenue Bldg., Winnipeg.....	Bernic and Cat Lakes
Sherritt Gordon Mines Ltd. (*).....	25 King St. W., Toronto, Ontario.....	Herb Lake
Magnetite Dolomite		
QUEBEC—		
Canadian Refractories Ltd.....	1050 Canada Cement Bldg., Montreal.....	Kilmar and Harrington
Mineral Waters—		
QUEBEC—		
Cie d'eau Minérale de St-Hyacinthe.....	632 Concord Ave., St-Hyacinthe.....	St-Hyacinthe
Eau Minérale Étoile.....	Ste-Geneviève-de-Batiscan.....	Batiscan
Doré Daird.....	Desbiens, Lac-St-Jean.....	Roberval
Gurd, Charles & Co. Ltd.....	1016 Bleury St., Montreal.....	Varennes
Lemay, Lucien.....	St-François-du-Lac.....	Nicolet Tp.
Lévesque, Ernest (*).....	Rivière-du-Loup Station.....	St-Louis-de-Kamouraska
Gauthier, Charles.....	Louisville.....	St-Léon
Minard, Edward.....	Maskinonge.....	Maskinongé
Montclair-Richelieu Spring Water Co. Ltd..	Chambly Basin.....	Chambly
Pellerin, A., and Sons.....	St-Barnabé-N.....	St-Maurice
Sources Abenakis Springs Ltd.....	366, rue Racine, Granby.....	St-François-du-Lac
Source Coulombia.....	L'Épiphanie.....	L'Épiphanie
Source d'eau Minérale Radnor.....	St-Maurice.....	St-Maurice
Usine d'Emboutillage Maski.....	St-Justin.....	St-Justin
ONTARIO—		
Carlsbad Springs, The.....	Carlsbad Springs.....	Gloucester Tp.
Deneault, J. F.....	Bourget.....	Bourget
Gurd, Chas., & Co. Ltd. (*).....	1016 Bleury St., Montreal, Quebec.....	Caledonia Springs
Renaud, Victor.....	Blackburn.....	Blackburn
Phosphate—		
QUEBEC—		
Bigelow, Robert.....	Buckingham.....	Bowman Tp.
Blackburn Bros. Ltd.....	85 Sparks St., Ottawa, Ontario.....	Perkins
High-Rock Phosphates Ltd.....	41 Main St., Buckingham.....	Portland W. Tp.
Cross, Stanley.....	28 Warren Ave., Ottawa, Ontario.....	Hull Tp.
ONTARIO—		
Ontario Phosphate Industries Ltd. (*).....	Room 1101, 62 Richmond St. W., Toronto...	Bedford Tp.
Silica Brick—		
NOVA SCOTIA—		
Dominion Steel & Coal Corp. Ltd.....	Sydney.....	Sydney
ONTARIO—		
Algoma Steel Corp. Ltd.....	Sault Ste. Marie.....	Sault Ste. Marie
Sodium Carbonate—		
BRITISH COLUMBIA—		
Bishop, V. C. (Mrs).....	c/o Boyds Garage, Clinton.....	Clinton area
Sodium Sulphate—		
SASKATCHEWAN—		
Horseshoe Lake Mining Co. Ltd. (*).....	Ormiston.....	Ormiston
Midwest Chemicals Ltd.....	Palo.....	Whiteshore Lake
Natural Sodium Products Ltd.....	Bishopric.....	Frederic Lake, Alsask
Sybouts Sodium Sulphate Co. Ltd.....	Gladmar.....	Gladmar
Sulphur (Pyrites)		
QUEBEC—		
Noranda Mines Ltd.....	Royal Bank Bldg., Toronto, Ontario.....	Noranda
Waite-Amulet Mines Ltd.....	Noranda.....	Duprat Tp.
ONTARIO—		
International Nickel Company of Canada Ltd. (*)	Copper Cliff.....	Copper Cliff
BRITISH COLUMBIA—		
Consolidated Mining & Smelting Company of Canada Ltd. (*)	Trail.....	Trail
Britannia Mining & Smelting Co. Ltd.....	Britannia Beach.....	Britannia Beach

CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS

DIRECTORY OF FIRMS—Continued

PORTLAND CEMENT PRODUCERS

Name of firm	Head office address	Location of plant
QUEBEC— Canada Cement Company Limited.....	Box 290, Station B, Montreal.....	Hull, Montreal East
ONTARIO— Canada Cement Company Limited..... St. Mary's Cement Co. Limited.....	Box 290, Station B, Montreal, Que..... 357 Bay St., Toronto.....	Belleville, Port Colborne St. Mary's
MANITOBA— Canada Cement Company Limited.....	Box 290, Station B, Montreal, Que.....	Fort Whyte
ALBERTA— Canada Cement Company Limited.....	Box 290, Station B, Montreal, Que.....	Exshaw
BRITISH COLUMBIA— British Columbia Cement Co. Limited.....	500 Fort St., Victoria.....	Bamberton

OPERATORS WHO SHIPPED BRICK, TILE, SEWER PIPE, ETC., MADE FROM DOMESTIC CLAYS—

(a) Clay used
(c) Idle 1946(b) Shale used
(d) Produce bentonite

Name of firm	Head office address	Location of plant
NOVA SCOTIA— Brooks, Stephen & Son (a) (b)..... Harriss & Harriss..... Shaw, L. E. Ltd. (a) (b)..... Standard Clay Products Ltd. (a) (b).....	Box 159, New Glasgow..... 5 Byng Ave., Sydney..... 74 Bedford Road, Halifax..... St. Johns, Que.....	New Glasgow Sydney Elmsdale New Glasgow
NEW BRUNSWICK— Ryan, M. & Son Ltd. (a)..... Shaw, L. E. Ltd. (b).....	Fredericton..... 74 Bedford Road, Halifax, N.S.....	Fredericton Chipman
QUEBEC— Ascot Tile & Brick Co. Ltd. (c)..... Canada China Clay & Silica Ltd..... Castonguay, Hubert..... Citadelle Brique Ltée (d)..... Desmarais, S. E. & Co. (a)..... East-Angus Brick & Tile (a)..... Laprairie Co. Inc., The (a) (b)..... Montreal Terra Cotta Ltd. (a)..... Potvin, Arthur (c)..... Potvin & Chandonnet (a)..... Roy, O. & P. (a)..... St. Lawrence Brick Co. Ltd. (b)..... St. Tite Briqueterie Ltée (a)..... Scott Brique Reg., La (a)..... Standard Clay Products Ltd. (a).....	Ascot Corner..... Kasil..... Deschailions..... 14 rue St-Joseph, Quebec..... Richmond..... Box 553, East Angus..... 906 University Tower Bldg., Montreal..... 911 Dominion Square Bldg., Montreal..... Mithcell Station..... Deschailions..... St. George West..... 1010 St. Catherine St. W., Montreal..... 132 rue St-Paul, St-Tite..... Scott Junction..... Box 189, St. Johns.....	Ascot Corner Kasil Deschailions Boischatel and Beauport E. Richmond Westbury Tp. Laprairie and Delson Junction Lakeside and Deschailions Mitchell Station Deschailions St. George West Laprairie St-Tite Scott Junction St. Johns
ONTARIO— Barnes, Wm. R. Co. Ltd. (a)..... Brampton Pressed Brick Co. Ltd. (b)..... Broadwell, B. & Son (a)..... Canadian Pressed Brick Co. Ltd. (b)..... Central Tile Brick Corp. Ltd. (a)..... Construction Materials Ltd. (a) (b)..... Cooksville Co. Ltd. (b)..... Cornhill, James & Sons Ltd..... Coults, George & Son (b)..... Curtin, F. Estate (a)..... Curtis Bros. (a)..... Deller, Albert & Son (a)..... Dochart Brick, Tile & Terra Cotta Works (a)..... Donaldson, Thos. G. (a)..... Douglas, John R. (a) (c)..... Dresden Tile Yard (a)..... Elliott, James Jr. (a)..... Elliott, Wm. (a)..... Fletcher Brick & Tile (a)..... Frid Bros. Ltd. (a)..... Hamilton Pressed Brick Co. Ltd. (a) (b).....	243 Cumberland Ave., Hamilton..... Brampton..... Kingsville..... Kenilworth S. Ave., Hamilton..... Tilbury..... Drawer 70, New Toronto..... 46 Bloor St. W., Toronto..... Box 36, Chatham..... Thedford..... R. R. 4, Lindsay..... Box 809, Peterborough..... Brownsville..... Arnprior..... R. R. 1, Greenock..... Wilkesport..... R. R. No. 2, Dresden..... 519 Wellington St. W., Sault Ste. Marie..... R. R. 1, Glenannan..... Fletcher..... 790 Main St. W., Hamilton..... 211 Kensington Ave. S., Hamilton.....	Waterdown Brampton Gosfield S. Tp. Hamilton Tilbury and Belle River Etobicoke Tp. Cooksville Harwich Tp. Bosanquet Tp. Lindsay Otonabee Tp. Brownsville Arnprior Culross Tp. Lambton Co. Dresden Korah Tp. Bruce Co. Tilbury E. Tp. Hamilton Wentworth, Co.

DIRECTORY OF FIRMS—Continued

OPERATORS WHO SHIPPED BRICK, TILE, SEWER PIPE, ETC., MADE FROM DOMESTIC CLAYS,—
Concluded

Name of firm	Head office address	Location of plant
ONTARIO—Concluded		
Hill, Aaron (a).....	Box 217, Essex.....	Essex
Hill, A. W. & Sons (a).....	Coatsworth.....	Tilbury E. Tp.
Hodders Tile Yard.....	Dutton.....	Elgin County
Howlett, Fred W. & Sons Ltd. (a).....	Petrolia.....	Lambton Co.
Huntsville Brick Works (a).....	Box 219, Huntsville.....	Chaffey Tp.
Interprovincial Brick Co. Ltd. (b).....	46 Bloor St. W., Toronto.....	Cheltenham, Milton
Janes, D. A. (a) (c).....	Mt. Brydges.....	Caradoc Tp.
Koebel Bros (a).....	St. Clements.....	St. Clements
Lindsay, Earl & Sons (a).....	R. R. 2, Wallaceburg.....	Kent Co.
Martin, Amos C. (a).....	R. R. 3, Wallenstein.....	Peel Tp.
McComb, Chester (a).....	R. R. 2, London.....	Middlesex
McFarlane, W. J. (b).....	Forest.....	Forest
McFarren, F. B. Ltd. (b).....	120 Wellington St. W., Toronto.....	Streetsville
Milton Brick Co. Ltd. (b).....	170 Bloor St. W., Toronto.....	Esquevinge Tp.
Napanee Brick & Tile Works (a).....	R. R. 3, Napanee.....	Lennox Co.
National Fireproofing Co. of Canada Ltd. (a) (b).....	57 Bloor St. W., Toronto 5.....	Wentworth Tp.
National Sewer Pipe Co. Ltd. (a) (b).....	320 Bay St., Toronto.....	Hamilton, Swansea
Norwich Brick & Tile Works (a).....	R. R. 2, Norwich.....	Oxford Co.
Ontario Reformatory (a) (b).....	Mimico.....	Etobicoke Tp.
Ottawa Brick & Terra Cotta Co. Ltd. (a) (b).....	Billings Bridge.....	Billings Bridge
Owen Sound Brick Co. Ltd. (a).....	Owen Sound.....	Owen Sound
Paxton, Fred R. (a).....	70 Herriek Ave., St. Catharines.....	St. Catharines
Phinn Brick Co. (a).....	238 Briscoe St., London.....	London
Phippen & Son (a).....	390 Dawes Road, East York.....	East York
Seegmiller, E. & E. Ltd. (a).....	525 Wendell Ave., Kitchener.....	Kitchener
Sproat & Sproat (a).....	R. R. 4, Seaforth.....	Tuckersmith Tp.
Superior Brick & Tile Co. Ltd. (a).....	426 Victoria Ave., Fort William.....	Paipoung Tp.
Taylor Bros. (a).....	Beaverton.....	Beaverton
Thomson, Ralph (a).....	R. R. 4, Atwood.....	Grey Tp.
Toronto Brick Co. Ltd. (a) (b).....	897 Bay St., Toronto 5.....	York Tp.
Wagstaff Brick Tile Co. (a).....	R. R. 4, Lindsay.....	Victoria
Wallace, R. & Son (a).....	92 First Ave., North Bay.....	Widdifield
Winch, Stuart A. (a).....	Paisley.....	Bruce
Wright, F. M. (a).....	Comber.....	Tilbury W. Tp.
MANITOBA—		
Alsip Brick, Tile & Lumber Co. Ltd. (a).....	537 Portage Ave., Winnipeg.....	Winnipeg, Whitemouth and Portage la Prairie
Marion Brick, Tile & Clay Products Ltd. (a).....	219 Laverendrye St., St. Boniface.....	Old Kildonan
Pembina Mountain Clays Ltd.....	915 Paris Bldg., Winnipeg.....	Morden
SASKATCHEWAN—		
Alberta Clay Products Co. Ltd. (a).....	Medicine Hat, Alta.....	Ravenscrag, Eastend, Willows
Bruno Clay Works Ltd. (a).....	411 Alberta Ave., Saskatoon.....	Bruno
Dominion Fire Brick & Clay Products Ltd. (a).....	Box 99, Moose Jaw.....	Claybank
Medalta Potteries Ltd. (a).....	Industrial Ave., Medicine Hat.....	Willows, Eastend
Medicine Hat Potteries (a).....	Box 672, Medicine Hat, Alta.....	Readlyn
Midland Clay Co. (a) (c).....	Willow Bunch.....	Willow Bunch
Saskatchewan Clay Products Corp. (a).....	Estevan.....	Estevan
Yorkton Brick Yard (a).....	Yorkton.....	Yorkton
ALBERTA—		
Acme Brick Co. Ltd. (a).....	125 Alberta Block, Edmonton.....	Cannell
Aetna Coal Co. (d).....	East Coulee.....	Rosedale Ferry
Alberta Clay Products Co. Ltd. (a).....	Medicine Hat.....	Medicine Hat
Grande Prairie Brick Yard.....	Grande Prairie.....	Grande Prairie
Gunderson Brick & Coal Co. Ltd. (b).....	Redcliff.....	Redcliff
Kidd, Gordon L. (d).....	Box 230, Drumheller.....	Drumheller
Little, J. B. & Sons Ltd. (a).....	10015—93 Street, Edmonton.....	Edmonton
Medicine Hat Brick & Tile Co. Ltd. (a).....	Box 100, Medicine Hat.....	Medicine Hat
Redcliff Pressed Brick Co. Ltd. (a) (b).....	Redcliff.....	Redcliff
BRITISH COLUMBIA—		
Abbotsford Fire & Pressed Brick Co. Ltd. (b).....	Abbotsford.....	New Westminster
Baker Brick & Tile Co. Ltd. (a).....	3191 Douglas St., Victoria.....	Victoria
Bazan Bay Brick & Tile Co.....	Saanichton.....	Bazan Bay
Clayburn Co. Ltd. (a) (b).....	850 W. Hastings St., Vancouver.....	Kilgard
Coast Clay Products (a).....	Pleasantside.....	Port Moody
Evans, Coleman & Evans (b).....	902 Columbia Ave., Vancouver.....	Gabriola Island
Fairey & Co. (a).....	661 Taylor St., Vancouver.....	Vancouver
Glover, F. (c).....	Princeton.....	Princeton
Haug, Wm. & Son (a) (c).....	Box 220, Kelowna.....	Kelowna
Port Haney Brick Co. Ltd. (a).....	846 Howe St., Vancouver.....	Haney
Port Moody Brick Co. (a) (c).....	1875 E. 38th Ave., Vancouver.....	Port Moody
Richmond, George W. (a) (c).....	4190 Blenheim St., Vancouver.....	Kilgard
Vancouver Brick & Tile Co. Ltd. (a) (c).....	902 Columbia St., New Westminster.....	Sullivan

DIRECTORY OF FIRMS—Continued

PRODUCERS OF STONEWARE AND POTTERY

Name of firm	Head office address	Location of plant
NEW BRUNSWICK—		
Canuck Pottery.....	198 Union St., Saint John.....	Saint John
Deichmann, K.....	Moss Glen.....	Moss Glen
Foley Pottery Ltd. (c).....	Saint John.....	Saint John
QUEBEC—		
Elsterman Quebec Art Pottery (a).....	Box 552 Ste. Agathe des Monts.....	Ste-Agathe-des-Monts
Laurentian Art Pottery Inc.....	St-Jérôme.....	St-Jérôme
Poterie de Saguenay, La.....	Chicoutimi.....	Chicoutimi
Syndicat des Céramistes paysans de Beauce.....	St-Joseph-de-Beauce.....	St-Joseph-de-Beauce
ONTARIO—		
Foster Pottery Co.....	Main St. W., Hamilton.....	Hamilton
ALBERTA—		
Medalta Potteries Ltd.....	Industrial Ave., Medicine Hat.....	Medicine Hat
Medicine Hat Potteries.....	Medicine Hat.....	Medicine Hat

FIRMS IN THE IMPORTED CLAY PRODUCTS INDUSTRY

Name of firm	Address
QUEBEC—	
Canada Firebrick Company Limited.....	4741 St. Ambroise St., Montreal
Canadian Potteries Limited.....	5 Mackenzie King St., St. Johns
Elsterman Quebec Art Pottery.....	22 Leblanc St., Ste-Agathe-des-Monts
Standard Clay Products.....	St. Johns
Walker-Hind-Sutherland Refractories Ltd.....	309 St. Ferdinand St., Montreal
ONTARIO—	
Ajax Clay Products.....	4160 Dundas St. W., Toronto
Armaco Limited.....	Bower St., Acton
Ball, R. N.....	419 Drew St., Woodstock
Canadian Ohio Brass Company Limited.....	Thorold Rd., Niagara Falls
Canadian Porcelain Company Limited.....	Paradise Rd., Hamilton
Canada Vittrified Products Limited.....	Talbot St. E., St. Thomas
Iva Crumback China.....	58 Perry St., Woodstock
Dominion Potteries.....	Dundas St. N., Oakville
Donvale Pottery Company.....	27 Davies Ave., Toronto 8
Electro Porcelain Limited.....	2 Stewart St., Kitchener
Ecanada Art Pottery.....	206 Dundurn St. S., Hamilton
Frontenac Floor & Wall Tile Co. Limited.....	Kingston
Georgetown Clay Products Limited.....	King St., Georgetown
Green, A. P. Fire Brick Co. Ltd.....	Commercial St. (Leaside) Toronto 12
Hamilton Porcelains Limited.....	38 Elgin St., Brantford
Hamilton Potteries Limited.....	100 Locke St., Hamilton
McMaster Pottery.....	Main St., Dundas
National Refractories Limited.....	Port Robinson
Pibrico Jointless Firebrick Ltd.....	Horner Ave., Toronto 14
Robinson Clay Product Co. of Canada Ltd.....	119 Shaftesbury Ave., Toronto
Smith Potteries.....	353 King St. W., Oshawa
Sovereign Potteries Limited.....	282 Sherman Ave. N., Hamilton
York China and Artware Co. Ltd.....	615 Spadina Ave., Toronto
Royal Canadian Art Pottery.....	Kenilworth Ave., Hamilton
John Petrik Limited.....	290 Dundas St., Woodstock
MANITOBA—	
Steinbach Pottery.....	Steinbach
BRITISH COLUMBIA—	
Allen Refractories.....	69-E—1st Ave., Vancouver

DIRECTORY OF FIRMS—Continued

THE LIME INDUSTRY

(*) Inactive

(b) Use dolomite limestone.

(d) Kind of limestone not reported.

(a) Use calcium or high calcium limestone

(c) Purchase lime.

(e) Brucitic limestone.

Name of firm	Head office address	Location of plant
NOVA SCOTIA—		
Dominion Steel & Coal Corp. Ltd. (b).....	Sydney.....	Sydney
Eastern Lime Co. Ltd. (a) (*).....	Windsor.....	Windsor
NEW BRUNSWICK—		
Bathurst Power & Paper Co. Ltd. (a).....	Bathurst.....	Bathurst
Purdy & Green Ltd. (a).....	204 Metcalfe St., Saint John.....	Saint John
Snowflake Lime Ltd. (a) (b).....	Saint John.....	Saint John
QUEBEC—		
Aluminum Company of Canada Ltd. (e).....	1700 Sun Life Bldg., Montreal.....	Wakefield
Arnaud, Edwilda (d).....	Joliette.....	Joliette
Bousquet, Adrien (d).....	St-Dominique.....	St-Dominique
Canadian Refractories Ltd. (e).....	1050 Canada Cement Bldg., Montreal.....	(c)
Carrière Trois-Rivières Ltd. (a).....	St-Louis-de-France.....	St-Louis-de-France
Dominion Lime Ltd. (a).....	Lime Ridge.....	Lime Ridge
Cote, Joseph (a).....	Metabetchouan.....	Metabetchouan
Dontigny, Raymond & Armand (d).....	Ste-Thècle.....	Ste-Thècle
Filion, Narcisse (d).....	St-Joachim.....	St-Joachim
Laurentain Stone Co. Ltd. (a).....	195 Nicholas St., Ottawa, Ont.....	Hull
Limoges, Henri (a).....	552 Poupart St. Montreal.....	St-Michel
Mercure, Camille (a).....	555, 16th Ave., St. Hyacinthe.....	St-Dominique
Shawinigan Chemicals Ltd. (a).....	Craig St. W., Montreal.....	Shawinigan Falls
Standard Lime Co. Ltd. (a).....	St-Paul-de-Joliette.....	St-Paul-de-Joliette
Trottier, David (d).....	St.Marc des Carrières.....	St-Marc-des-Carrières
ONTARIO—		
Bell, Cecil N. (b).....	R.R. No. 4, Chesley.....	Sullivan Tp.
Brunner Mond (Canada) Ltd. (a).....	Canadian Bank of Commerce Bldg., Toronto.....	Anderdon Tp.
Canada & Dominion Sugar Co. Ltd. (a).....	Chatham.....	Chatham and Wallaceburg
Canadian Gypsum Co. Ltd. (b).....	Windsor, N.S.....	Guelph
Carleton Lime Products Ltd. (a).....	Box 26, Carleton Place.....	Carleton Place
Chemical Lime Ltd. (a).....	Beachville.....	Beachville
Gypsum Lime & Alabastine, Canada, Ltd. (a) (b).....	Paris.....	Beachville, Glen Christie
Jamieson Lime Co. (a).....	Renfrew.....	Halton
North American Cyanamid Ltd. (a).....	Niagara Falls.....	Horton Tp.
Rockwood Lime Co. (b).....	Box 46, Rockwood.....	Niagara Falls
Shane Lime & Charcoal Co. Ltd. (a).....	Eganville.....	Rockwood
		Grattan Tp.
MANITOBA—		
Building Products & Coal Co. Ltd. (b).....	111 Christie St., Winnipeg.....	Inwood
Gypsum Lime & Alabastine, Canada Ltd. (b).....	Paris Ont.....	(c)
Manitoba Sugar Co. Ltd. (a).....	Fort Garry.....	Fort Garry
Winnipeg Supply & Fuel Co. Ltd. (a) (b).....	812 Boyd Bldg., Winnipeg.....	Moosehorn and Stonewall
ALBERTA—		
Canadian Sugar Factories Ltd. (a).....	Raymond.....	Raymond and Picture Butte
Errico, M. (d).....	Cadomin.....	Cadomin
Loder's Lime Co. Ltd. (a).....	Kananaskis.....	Kananaskis
Summit Lime Works Ltd. (a).....	Box 273, Lethbridge.....	Crow's Nest District
BRITISH COLUMBIA—		
Pacific Lime Co. Ltd. (a).....	744 W. Hastings St., Vancouver.....	Texada Island
Pacific Mills Ltd. (a).....	Campbell Ave., Vancouver.....	Ocean Falls

PRINCIPAL SAND AND GRAVEL OPERATORS

In addition to the names listed below, production has been reported by the railway companies for ballast, and also a considerable amount by counties and townships in Ontario for road use.

(w) Markets washed or screened material.

Name of firm	Head office address	Location
NOVA SCOTIA—		
Crockett, V. B.	Wallace.....	Belmont
Nova Scotia Department of Highways.....	Halifax.....	Various
Rayner Construction Ltd. (w).....	29 Commercial Rd., Leaside.....	Debert
Warren Bituminous Paving Co. Ltd.....	1454 Bloor St. W., Toronto 9, Ont.....	Yarmouth

DIRECTORY OF FIRMS—Continued

PRINCIPAL SAND AND GRAVEL OPERATORS—Continued

Name of firm	Head office address	Location
NEW BRUNSWICK—		
Anderson, A. W. Estate.....	Fairville.....	Fairville
Likely, Jos. A. Ltd.....	Saint John.....	East Saint John
Maxwell, Elmer E.....	St. Stephen.....	Bay Road
New Brunswick Department of Highways.....	Fredericton.....	Various
Stuart and Smith.....	Fairville.....	Fairville
Warren Bituminous Paving Co. Ltd. (w).....	1454 Bloor St. W., Toronto 9, Ont.....	Sussex
QUEBEC—		
Asselin, Adrien.....	112, ave. des Oblats, Quebec.....	Ste-Foy
Beaudry, Antoine.....	Lachenaie, Co. L'Assomption.....	Mascouche
Bigras, Omer.....	Sainte-Rose West.....	Sainte-Rose West
Bonner Sand and Ballast Ltd. (w).....	1434 St. Catherine St. W., Montreal.....	South Durham
Bouchard, Raoul, Industriel.....	819-8e Ave., Port Alfred.....	Grande-Baie
Breen, Mary Ann.....	Guigues.....	Guigues
Brouillet Sand & Gravel Co. Ltd. (w).....	Rawdon.....	St-Julienne
Camarda, Nick.....	6876 De Gaspé St., Montreal.....	Pointe-Calumet
Canadian Johns-Manville Co. Ltd.....	Sun Life Bldg., Montreal.....	Asbestos
Coaticook, City of.....	Coaticook.....	Coaticook
Compagnie de Sable Ltée (w).....	10-3e ave., Quebec.....	St. Charles River
Consolidated Oka Sand & Gravel Co. Ltd. (w).....	248 McCord St., Montreal.....	Lake of Two Mountains
Gagnon, Arthur.....	1740 Fourth St., Grand'Mère.....	Grand'Mère
Goyer, Edouard & Frère.....	St-Bruno.....	St-Bruno
Granby, City of.....	Granby.....	Granby
Hains, A. Limitée.....	837 Avenue Royale, Beauport.....	Ste-Thérèse-de-Lisieux
Laberge, Evariste.....	Ste-Foy.....	Ste-Foy
Latulippe, Philippe (w).....	240, de la Ronde, Quebec.....	St-Charles River
Magog, City of.....	Magog.....	Magog
Marchand & Frère.....	505-8e rue Almaville-en-haut, Quebec.....	Mont-Carmel
Montreal Dual Mixed Concrete Ltd.....	6301 Park Ave., Montreal.....	Charette, St. Maurice Co.
Potier & Frères.....	8645, rue Casgrain, Montreal.....	Two Mountains
Provost Cartage Co. Ltd.....	236, rue St-Augustin, Montreal.....	Pointe-Calumet
Quebec, City of.....	Quebec.....	Ste-Thérèse-de-Beauport
Robert & Dufour Engr.....	929 Avenue Royale, Beauportville.....	Ste-Thérèse-de-Beauport
St. Francis River Dredging Co. (w).....	St-François-du-Lac.....	St-François River
Sables des Mille Îles Ltée, Les.....	19 rue Dupont, Montreal.....	St-Henri-de-Mascouche
Sherbrooke, City of.....	Sherbrooke.....	Oxford Tp.
Standard Lime Co. Ltd. (w).....	Joliette.....	Ste-Emelie
Standard Sand & Gravel Ltd. (w).....	St-Félix-de-Valois.....	St-Félix-de-Valois
Teller Construction Co. Ltd.....	248 McCord St., Montreal.....	Calumet, (Oka)
Tremblay, Jos.....	376 George St., Shawinigan Falls.....	Almaville
Two Mountains Sand Co.....	517 Canada Cement Bldg., Montreal.....	St-Joseph-du-Lac
Venne, Oscar.....	Lachenaie.....	Lachenaie
ONTARIO—		
Axford, J. B., & Son.....	35 Elm St., St. Thomas.....	South Yarmouth
Bailey, E. R.....	R.R. 5, Embro.....	Oxford
Barnes, Wm. R. Co. Ltd. (w).....	243 Cumberland Ave., Hamilton.....	Waterdown
Bast, Aaron.....	Bridgeport.....	Bridgeport Road
Bellyou, N. E.....	R.R. 4, Trenton.....	Trenton
Boyd Bros.....	Osgoode.....	Osgoode
Braas Bros. Sand Co.....	R.R. 3, Niagara Falls.....	Stamford
Brantford City, Corporation of the.....	Brantford.....	Brantford
Burrows, J. W.....	647 Lavery St., North Bay.....	Widdifield Tp.
Coleman, Gordon T. (w).....	235 Sydney St., Cornwall.....	Bonville
Consolidated Sand & Gravel Ltd. (w).....	420 Harbour Commission Bldg., Toronto.....	Waterford, Fuller, Paris
Cooper, A. & Co. (w).....	212 North May St., Fort William.....	Thunder Bay
Corley, E. & Sons.....	94 Adelaide St. N., Lindsay.....	Ops Tp.
Crosby, William.....	Princeton.....	Blenheim Tp.
Cudmore, Harold T.....	R.R. 1, Hensall.....	Hensall
Curran & Briggs Ltd. (w).....	61 Haverson Blvd., Toronto.....	Bancroft, Hagar, Graven-
Davison, Lloyd.....	R.R. 3, Georgetown.....	hurst, Burwash, Whitefish
Dibblee Construction Co. Ltd. (w).....	248 Albert St., Ottawa.....	Essa Tp.
Dixie Sand & Gravel Limited.....	Dixie.....	Burnstown, Cardinal,
Dobie, Mrs Draper (w).....	Port Colborne.....	Chesterville
Dome Mines Limited.....	South Porcupine.....	Dixie
Eagen, Wm.....	R.R. 4, Embro.....	Humberstone Tp.
Eberhart, George B.....	Seaforth.....	Cochrane
Elgin Construction Co. Ltd.....	St. Thomas.....	Embro
Ellis Bros. (w).....	304 Scarlett Rd., Toronto.....	Seaforth
Elliott, Jack (w).....	Box 284, Kapuskasing.....	St. Thomas
Fewster, Stanley.....	R.R. 4, St. Marys.....	Etobicoke Tp.
Forwell Sand & Gravel Ltd. (w).....	31 Whitney Place, Kitchener.....	O'Brien Tp.
Foster, R.R. & Sons Limited.....	86 Spadina Ave., Ottawa.....	Oxford Co.
Foy, G. C. (w).....	R.R. 2, Wardsville.....	Waterloo Tp.
Fraser Brace Ltd. (w).....	1910 Royal Bank Bldg., 360 St. James West, Montreal, Que.....	Britannia Heights
Galbraith, Frank (w).....	Rodney.....	Wardsville
Gauthier, J. T.....	Porcupine.....	Chalk River
Goodreau, Charles E. (w).....	R.R. 3, Northwood.....	Rodney
Grandmaitre, Donat.....	71 Montreal Rd., Eastview.....	Whitney Tp.
Guelph Sand & Gravel Ltd. (w).....	Inkerman St., Guelph.....	Harwich Tp.
Guelph, City of.....	Guelph.....	McKays Lake
		Guelph Tp.
		Guelph

DIRECTORY OF FIRMS—Continued

PRINCIPAL SAND AND GRAVEL OPERATORS—Continued

Name of firms	Head office address	Location
ONTARIO—(Concluded)		
Hall, Thomas G.	Box 67, Plattsville	Blenheim Tp.
Halliburton Estate	101 Strangest, Guelph	Guelph
Harvey, John R.	Box 811, Arnprior	Arnprior
Hayward, Gordon	Embro	West Zorra Tp.
Highland Creek Sand & Gravel Ltd. (w.)	Highland Creek	Highland Creek
Hill, Walter (w.)	Merlin	Romey Tp.
Hollinger Consolidated Gold Mines Ltd.	Timmins	Tisdale Tp.
Howard Sand & Gravel Co. Ltd. (w.)	Aldershot	Flamboro E. Tp.
Jones, J. D.	R. R. 2, Wilton Grove	Wilton Grove
Jupp, A. E. Construction Co. Ltd.	56 Blake St., Toronto 6, Ontario	Medante Tp.
Kettle, Mrs. Wm.	Petrolia	Enniskillen Tp.
Keyes, Mrs. S.	R. R. 8, Woodstock	Woodstock
Kilbourne, H. & Son	London	Westminster Tp.
Kingston Sand & Gravel Ltd.	235 Wellington St., Kingston	Kingston
Kirkland, Gordon B.	R. R. 3, Lucknow	Ashfield Tp.
Liley, William	R. R. 6, London	London
Madill, Bert	R. R. 1, Arkona	Middlesex County
Martin & Dayman	Drumbo	Blenheim Tp.
McAdams, Harry	R. R. 3, Zurich	Hay Tp.
McCall, Wm.	Carleton Place	Lanark Tp.
McCready, D.	R. R. 2, Thamesford	Thamesford
McLellan, Jas. L.	Thamesford	East Nissouri
McGovern, C. L. (w.)	Sherkston	Sherkston
McLean, A. B. & Sons (w.)	Sault Ste. Marie	Sault Ste. Marie
Morris, P. R. (w.)	26 John St. N., Hamilton	Saltfleet Tp.
Nagle, J. M.	Dublin	Hibbert Tp.
National Sand & Material Co., Ltd. (w.)	402 Harbour Commission Bldg., Toronto	River
Nevill, George	R. R. 5, Aylmer West	Elgin
Nicholson Transit Co. (w.)	Box 66 River Rouge 18, Michigan U.S.A.	St. Clair River
Ontario Sand & Gravel Co. Ltd.	1211 Bathurst St. Toronto	Maple
Park Bros.	Lucan	Lucan
Parisien, Fernand	Alfred	Alfred
Quigley's Foundry Sands Ltd. (w.)	Bartonville	Waterdown
Quinn, Howard	R. R. 9, Peterborough	Douro Tp.
Radford, George E.	Blyth	Blyth
Richardson, J. E.	Thamesville	Thamesville
Sarjeant Co. Ltd.	Barrie	Barrie
Sarnia Board of Parks Management (w.)	1844 N. Front St., Sarnia	Lake Huron
Scott, T.	R. R. 1, Seaforth	Seaforth
Shelton, Russell A.	R. R. 5, Ingersoll	Durham
Smythe, C. Ltd. (w.)	Box 8, Postal Station D. Toronto 9	Mt. Dennis
Speiran, G. A.	R. R. 2, Brussels	Guy Tp.
Spratt, G. H. (w.)	Billings Bridge	Gloucester Tp.
Sutherland, Hugh A.	R. R. 4, Embro	Oxford Co.
Tees Transit Co. (w.)	58 Whitton Road, Hamilton	Niagara Bar
Towland Construction Co. Ltd.	294 Dundas St., London	West Nissouri Tp.
United Towing & Salvage Co. Ltd. (w.)	635 Common St. Montreal	Thunder Bay
Warren Bituminous Paving Co. Ltd.	1454 Bloor St. West, Toronto	Smith Tp.
Woodbridge Sand and Gravel Co.	R. R. 3, Woodbridge	Woodbridge
Woodliff Fuel & Supply Co. Ltd. (w.)	2171 Ottawa St., Windsor	Leamington
Wylie, Greer	Wingham	Huron Tp.
Yundt, William (w.)	29 Downie St., Stratford	Ellice Tp.
MANITOBA—		
Alsip Brick, Tile & Lumber Co. Ltd.	537 Portage Ave., Winnipeg	Beausejour
Brandon, City of	City Hall, Brandon	Brandon
Building Products & Coal Co. Ltd.	111 Christie St., Winnipeg	Birds Hill
Cummings & Dobbie	233 Ninth Street, Brandon	Brandon
Greater Winnipeg Water District	185 King St., Winnipeg	1/2 Mile 39 and Mile 80 G.W.
Manitoba Department of Highways	Winnipeg	WD Ry.
McCurdy Supply Co. Ltd. (w.)	Sargent & Erin Streets, Winnipeg	Various
Provincial Gravel & Coal Co.	608-356 Main Street, Winnipeg	
Rosser, Municipality of	Rosser	Rosser
Universal Lumber & Supply Co.	1034 Arlington St., Winnipeg	Molson
Winnipeg, City of	223 James Ave., Winnipeg	Birds Hill
SASKATCHEWAN—		
Betteridge, Stanley	Pilot Butte	Pilot Butte
Eamon, H. G. & Co.	Biggar	Biggar
Elander, John	Flin Flon	Flin Flon
Hudson Bay Mining & Smelting Co. Ltd.	500 Royal Bank Bldg., Winnipeg, Man.	Flin Flon
North Battleford, City of	1201 King St., North Battleford	North Battleford
Prince Albert, City of	Prince Albert	Prince Albert
Saskatchewan Department of Highways	Regina	Various
ALBERTA—		
Alberta Department of Highways	Edmonton	Various
Doncaster Construction Co. Ltd.	Garneau Theatre Bldg., Edmonton	Edmonton
Cristall Sand Ltd.	10165-104 St., Edmonton	Perryvale
Jefferies & Sons Limited (w.)	Calgary	Calgary
Mountain View, District of	Didsbury	Calgary
Nanton, Town of	Nanton	Mountain View
Western Engineers Ltd.	300 Leeson Lineham Bldg., Calgary	Nanton

DOMINION BUREAU OF STATISTICS

DIRECTORY OF FIRMS—Continued

PRINCIPAL SAND AND GRAVEL OPERATORS—Concluded

Name of firm	Head office address	Location
BRITISH COLUMBIA—		
Armstrong, City of.....	P.O. Box 40, Armstrong.....	Armstrong
B.C. Electric Ry. Co.....	Vancouver.....	Various
British Columbia Department of Highways.....	Victoria.....	Various
Burnaby, District of.....	New Westminster.....	Burnaby
Chilliwack, City of.....	Chilliwack.....	Chilliwack Tp.
Colebrook Sand & Gravel Co. Ltd.....	Box 120, White Rock.....	Surrey Municipality
Consolidated Mining & Smelting Co. of Canada Ltd.....	Trail.....	Fort Steele and Tadanac
Cranbrook, City of (w).....	Cranbrook.....	Fort Steele
Deeks Sand & Gravel Co. Ltd. (w).....	101 West First Ave., Vancouver.....	Seymour Creek, North Vancouver and Coquitlam
Delta, Corporation of.....	Ladner.....	Ladner
Fernie, City of.....	Fernie.....	Fort Steele
Gilley Bros. Ltd. (w).....	902 Columbia St., New Westminster.....	Port Coquitlam
Greening, Wm. H.....	Armstrong.....	Larkin
Highland Sand & Gravel Co., Ltd. (w).....	Lynnour.....	Lynnour
Hillside Sand & Gravel Ltd. (w).....	1075 Main St., Vancouver.....	Hillside
Kamloops City of.....	288 First Avenue, Kamloops.....	Kamloops
McIntyre & Harding Gravel Co., Ltd. (w).....	Saanich.....	Cordova Bay
Nelson, City of (w).....	501 Front St. Nelson.....	Nelson
Pitkethly Bros. (w).....	8699 Angus Drive, Vancouver.....	Vancouver
Port Alberni, City of.....	Port Alberni.....	Port Alberni
Producers Sand & Gravel Co., (1929) Ltd. (w).....	1002 Store Street, Victoria.....	Royal Bay
Road Materials Ltd. (w).....	8699 Hudson St., Vancouver.....	North Vancouver
Saanich, District of.....	Royal Oak P.O., Vancouver Island.....	Saanich District
Trail, City of.....	1394 Pine Avenue, Trail.....	West Kootenay

THE STONE QUARRYING INDUSTRY

(*) Firms operating dressing works in conjunction with quarry.

(†) Did not ship in 1946.

Granite

Name	Head office address	Location
NOVA SCOTIA—		
Bower, A. R.....	Box 255, Shelburne.....	Shelburne
Dauphinee, W. T. (*).....	Shelburne.....	Shelburne
Nixon, W. H. & Sons (*).....	R.R. 3, Middleton.....	Nictaux West
Rice Bros. (*).....	Lawrencetown.....	Nictaux West
Rice, W. D. (*).....	Middleton.....	Nictaux West
NEW BRUNSWICK—		
Granite Street Pavement & Construction Co. Ltd.....	Box 1137, Saint John.....	Hampstead
Milne Coutts & Co. Ltd. (*).....	St. George.....	St. George
Mooney & Sons Realty Ltd., B.....	Box 727, Saint John.....	Hampstead
O'Brien & Baldwin (*).....	St. George.....	St. George
Spinney's Quarry.....	Box 96, St. George.....	St. George
QUEBEC—		
Adru Granite Inc.....	4023 Dorchester St. W., Montreal.....	Beebe
Anderson, James (*).....	Box 125, Beebe.....	Beebe
Bérubé, Lucien (*).....	Brownsburg.....	Chatham Tp.
Bolduc, Antonio (*).....	St-Sébastien.....	Beauce
Bourbonnais, J. A.....	Rigaud.....	Rigaud
Boyer, Hervé.....	Mount Royal.....	New Glasgow
Brodies' Ltd. (*).....	1070 Bleury St., Montreal.....	Guenette
Bussiére & Frère (*).....	St. Sébastien.....	Graniteville
Canada Black Granite Co. Ltd.....	Box 550, Rouyn.....	Mount Johnson
Cananite Red Granite Reg'd.....	Box 19, Grenville.....	St-Cécile
Carrière Shawinigan.....	57a First St., Shawinigan Falls.....	Beauchastel Tp.
Cie de Marbre & de Tuile de Quebec Ltée.....	327 Dorchester St., Quebec.....	Scotch Road
Cloutier, R. L. (*).....	Beebe.....	St-Flore
Delwaide & Goffin (*).....	1365 St-Valier St., Quebec.....	St-Cécile
Deschambault Quarry Corp. (*).....	56 St. Pierre St., Quebec.....	Beebe
Dostie & Trepanier Engrs.....	R.R. 1, Mégantic Ville.....	Chicoutimi
Drummond, La Compagnie Pierre Concassee.....	Box 712, Sherbrooke.....	St-Gérard
Dubois, Honore (*).....	Rivière-à-Pierre.....	St-Cécile
Dumas & Voyer.....	Rivière-à-Pierre.....	Drummond
Gaboriault & Nevers (*).....	Box 65, Grenville.....	Rivière-à-Pierre
Gagnon, Arthur.....	1740 Fourth St., Grand'Mère.....	Portneuf Co.
Giguère, H. Camille.....	Rouyn.....	Grenville Tp.
		Grand'Mère
		Rouyn

DIRECTORY OF FIRMS—Continued
THE STONE QUARRYING INDUSTRY—Continued
Granite—Concluded

Name	Head office address	Location
QUEBEC—Concluded		
Gosselin, Oscar.....	Lac-Mégantic.....	St-Samuel
Granit National Ltée (*).....	St-Joseph-d'Alma.....	St-Gédéon, St-Joseph-d'Alma
Granit Noir Du Canada Ltée.....	Box 550, Rouyn.....	Beauchastel Tp.
Granit St. Jerome Ltée.....	Box 10, Rosemount, Montreal.....	St-Eustache, Est.
Grenier, Elie.....	Glenada.....	Glenada
Haselton Granite Quarries.....	Beebe.....	Beebe
Jacques, Arthur.....	Rivière-à-Pierre.....	Rivière-à-Pierre
Lacasse & Boulais.....	Box 23, Beebe.....	Beebe
Laforce, H. & Fils (*).....	1327 St-Valier St., Quebec.....	Chicoutimi
Laroche, Omer.....	Rivière-à-Pierre.....	Portneuf Co.
Maltais, Charles.....	St-Joseph-d'Alma.....	St-Joseph-d'Alma
Marvel Granite Reg.....	17 Notre Dame Donnacona.....	St-Raymond
Pare, Elzear.....	441 Lagauchetière E., Montreal.....	Guenette
Perron, Arthur.....	Rivière-à-Pierre.....	Portneuf Co.
Quebec North Shore Paper Co.....	680 Sherbrooke St. W., Montreal.....	Baie-Comeau
Riverin & Riverin.....	Chicoutimi.....	Chicoutimi
Rousseau, Ben.....	283 Heriot St., Drummondville.....	St-Charles
St. Bruno Quarry & Paving Co. Ltd.....	636 Ave. Querbes, Outremont.....	St-Bruno
St. Samuel Granite.....	St. Samuel Station.....	Frontenac Co.
Scotstown Granite Co. Ltd. (*).....	Cap St. Martin.....	Cap-St-Martin
Sherbrooke, City of.....	Box 754, Sherbrooke.....	Sherbrooke
Silver Granite Co. Ltd. (*).....	2251 rue Delormier.....	St-Gédéon
Stanstead Granite Quarries Co. Ltd. (†).....	Beebe.....	Beebe
Super Service Inc.....	77 Perrault Est., Rouyn.....	Rouyn
ONTARIO—		
Bancroft Mica & Stone Products Mining Synd. Ltd.....	Selby.....	Hastings Co.
Building Products Limited.....	Box 6063, Montreal.....	Madoc
Hall, Wilfred J. R.....	36 Burritt St., Parry Sound.....	McDougall Tp.
Horne Granite Quarries.....	Butler via Ignace.....	Butler
Ontario Rock Co., Limited.....	Room 303, 2 College St., Toronto.....	Belmont Tp.
MANITOBA—		
Winnitoba Marble Co. Ltd. (*).....	1180 Wall St., Winnipeg.....	West Hawk Lake
BRITISH COLUMBIA—		
B.C. Monumental Works Ltd.....	27 Kingsway, Vancouver.....	Granite Island
Canadian National Railways.....	Montreal.....	Skenna, Ashcroft
Canadian Pacific Railway Co.....	Montreal.....	Albert Canyon
Coast Quarries Ltd.....	1840 West Georgia St., Vancouver.....	Granite Falls
Corporation of the City of Nelson.....	501 Front St., Nelson.....	Nelson, M.D.
Nelson Granite and Monumental Co.....	550 Front St., Nelson.....	Nelson, M.D.
Prince Rupert, City of (†).....	Prince Rupert.....	Skenna
Valley Granite Ltd.....	Cheam-View.....	Yale Dist.
Vancouver Granite Co. Ltd.....	308 Pacific Bldg., Vancouver.....	Nelson Island
Vernon Granite & Marble Co.....	Box 265, Vernon.....	Yale Dist.
Wilson Son & Co. Ltd., James.....	Sirdar.....	Nelson

Limestone

NOVA SCOTIA—		
Dillman Bros.....	Admiral Rock.....	Admiral Rock
Dominion Steel and Coal Co. Ltd.....	Sydney.....	Sydney
Eastern Lime Co. Ltd. (*).....	Box 60, Windsor.....	Windsor
Mersey Paper Co. Ltd.....	Liverpool.....	East River Point
Mosher Limestone Co. Ltd.....	Upper Musquodoboit.....	Upper Musquodoboit
Nairn, J. S.....	24 Whitney Ave., Sydney.....	Scotch Lake
Nova Scotia Department of Agriculture.....	Halifax.....	Vious
Windsor Foundry.....	Windsor.....	Windsor
NEW BRUNSWICK—		
Alward, Roy M.....	Butternut Ridge.....	Springhill
Brookville Manufacturing Co. Ltd.....	Brookville.....	Brookville
Elm Tree Limestone Co-operative Co. (*).....	Petit Rocher North.....	Petit Rocher North
Havelock Lime Works.....	Havelock.....	Havelock
Snowflake Lime Limited.....	3 Pokiok Rd., Saint John.....	Saint John
QUEBEC—		
Amendements Calcaires de R-B, Les.....	Rivière-Bleue.....	Rivière-Bleue
Andoro, Jean (*).....	Cap-St-Martin.....	Cap-St-Martin
Beaudry, J. P.....	Joliette.....	Joliette
Beauregard, La Compagnie Ltd.....	Stukley North.....	Stukley North
Beco Engr.....	Box 219, Rimouski.....	Lafèche Co.
Bédard, Jean Ltée (*).....	270—33rd Ave., Lachine.....	Lachine
Boucher, Louis.....	Percé.....	Gaspé Co.
Boucher, Telesphore.....	Notre-Dame-de-la-Salette.....	Notre-Dame-de-la-Salette
Bourget, John D.....	Deforceville.....	Gaspé Co.
Canada Cement Co. Ltd.....	Box 290, Montreal.....	Hull

DIRECTORY OF FIRMS—Continued

THE STONE QUARRYING INDUSTRY—Continued

Limestone—Continued

Name	Head office address	Location
QUEBEC—Concluded		
Canadian Quarries Co.	2251 Chemin de-la-Côte-St-Michel	St-Michel
Carrière Bernier Enrg.	R. R. 2, St-Jean	St-Jean
Carrière du Cap St. Martin	636 Ave. Querbes, Outremont	Cap-St-Martin
Carrière Gravel Ltée.	Château-Richer	Château-Richer
Carrière Pointe-Claire	Pointe-Claire	Pointe-Claire
Carrière St. Barthelemy Ltée.	St-Barthelemy	St-Barthelemy
Carrière de St. Dominique Ltée (*)	555-16th Ave., St-Hyacinthe	St-Dominique
Carrière St. Maurice Inc.	1497 Craig St., Trois-Rivières	St-Louis-de-France
Carrière Trois Rivières Ltée.	St-Louis-de-France	St-Louis-de-France
Charbonneau, L. & Cie.	St-François-de-Sales	Laval Co.
Charron Ferdinand	Canton Bélanger	Laval Co.
Charron & Fils	3896 St. Dominique St., Montreal	Bélanger Village
Cyr, Arsene	St-Alphonse-de-Caplan	Bonaventure
Department de la Justice (*)	Ottawa, Ontario	St-Vincent-de-Paul
Deschambault Quarry Corp. (*)	56 rue St-Pierre, Quebec	St-Marc-des-Carrières
Dominion Lime Ltd.	Lime Ridge	Lime Ridge
Durocher, Cyrville	11021 Notre-Dame E. Montreal	Montreal East
Eastern Quarries Co.	1043 Blvd. des Forges, Three Rivers	Portneuf
Filion, Aldege	Lachute	Lachute
Fiset, Elidore	St-Marc-des-Carrières	St-Alban
Fortin, Camille	Chambrod Junction	Lac-St-Jean
Fuger & Smith Ltd.	78 Victoria Ave., Pointe-Claire	Pointe-Claire
Gagné, Octave	St-Ulric	St-Ulric
Gagnon & Leclerc	St-Joachim	St-Joachim
Gaspesian Fertilizer Co.	Port Daniel E.	Port Daniel E.
Gauthier, J. O. (*)	St-Marc-des-Carrières	St-Marc des Carrières
Gingras & Frère Ltée.	St-Marc-des-Carrières	St-Marc des Carrières
Goulet, Sarto	242 Blvd. Benoit XV, Quebec	Portneuf
Gosselin, Alphonse	St-Laurent	Trinity Bay
Hargate Quarries Limited	Cap-St-Martin	St-Laurent
Kennedy Construction Co. Ltd.	407 McGill St., Montreal	Laval Co.
Laberge & Marchand Enrg.	Chateauguay	Actonvale
Lagace Quarry	130 Blvd. Labelle, L'Abord-à-Plouffe	Chateauguay
Lakeshore Construction Co. Ltd.	137 Cartier Ave., Pointe-Claire	L'Abord-à-Plouffe
Landry, J. P. A.	St-André, Matapedia	Pointe-Claire
Langlois, Adjuitor	St-Marc-des-Carrières	St-André
Larouche, J. B.	Baie-St-Paul	St-Marc-des-Carrières
Lasalle Quarry Ltd.	8413 Blvd. St-Michel, Montreal	Baie-St-Paul
Laurentian Stone Co. Ltd.	195 Nicholas St., Ottawa, Ontario	Ville-St-Michel
Leclerc, J. J.	Drapeau	Hull
Martineau, La Cie de Pierre de Taille Ltée (*)	Box 10, Rosemont, Montreal	Drapeau
McDonald, R. & Co. Ltd.	2020 Union Ave., Montreal	Pont-Viau
Mercure, Camille	555-16th Ave., St-Hyacinthe	Wakefield
Miner, R. H. Co. Ltd.	Room 719, Sun Life Bldg., Montreal	St-Dominique-de-Bagot
Ministère de la Voirie	Quebec	Bélanger Village St-Laurent
Montreal Cut Stone Co. (*)	1869 rue St-André, Montreal	St-Charles-de-Bellechasse
Montreal Quarry & Cut Stone Co.	2020 Union Ave., Montreal	St-François-de-Sales
National Quarries Ltd.	6301 Park Ave., Montreal	St-Michel
Paquette, Levis	Cap-St-Martin	Laval Co.
Pelletier, Jos. E.	Ste-Anne-des-Monts	Cap-St-Martin
Pulverized Products Ltd.	4820 Fourth Ave., Rosemount	Gaspé N.
Rioux, Paul & Maurice	Cowansville	St-Armand
Roberval Construction Ltée.	Roberval	Cowansville
St. Francis Rock Products & Equipment Ltd.	St-Laurent	Roberval
St. Laurent Stone Products & Supplies Ltd.	St-Laurent	St-Laurent
Salaberry de Valleyfield, La Cite.	Valleyfield	St-Laurent
Shawinigan Chemicals Ltd.	Montreal	Valleyfield
Standard Lime Co. Ltd.	Joliette	Bedford
Syndicat Co-operatif de la Carrière de Ferme-Neuve	Ferme-Neuve	St. Paul de Joliette
Syndicat de Broyage de Lévis	St-Joseph-de-Lévis	Ferme Neuve
Tanguay & Royer Enrg.	Ste-Justine	St-Joseph-de-Lévis
Trappe de N. D. de Mistassini, La	Le Village des Pères (Roberval)	Ste-Justine
Tremblay, Napoléon	31 rue Joffre, Hull	Mistassini
Tremblay, Wellie	Ste-Anne-de-Chicoutimi	Hull
Turcotte & Asselin	370 Dorchester St., Quebec	Canton Tremblay
Union des Carrières & Pavages Ltée	48 Second Ave., Quebec	Château-Richer
Varin, Joseph	3275 Chemin St-Michel, St-Michel	Charlesbourg
Verreault, Elz. Ltée	194 du Pont, Quebec	St-Michel
Viau, Paul	340 Blvd. du Havre, Valleyfield	Gifford
ONTARIO—		
Abitibi Power & Paper Co. Ltd.	408 University Ave., Toronto	Grande Isle
Bonter Marble & Calcium Co. Ltd.	Box 61, Marmora	Bucke Tp.
Bonter, W. F.	Malor	Marmora
Brunner Mond Canada Ltd.	Canadian Bank of Commerce Bldg., Toronto	Malone
Canada Cement Co. Ltd.	Box 290, Montreal, Que.	Anderson Tp.
Canada Crushed Stone Ltd.	72 Sun Life Bldg., Hamilton	Belleville
Carleton Lime Products Co.	Box 26, Carleton Place	Dundas, Hagersville
Chemical Lime Ltd.	Beachville	Ramsay Tp.
Chem-Ore Mines Ltd.	156 Yonge St., Toronto	Beachville
		Bobcaygeon

DIRECTORY OF FIRMS—Continued

THE STONE QUARRYING INDUSTRY—Continued

Limestone—Concluded

Name	Head office address	Location
ONTARIO—Concluded		
Cook, J. S. Stone Quarries (*)	Warton	Amabel Tp.
Gypsum, Lime & Alabastine, Canada, Ltd.	Paris	Beachville
Hagersville Quarries Ltd.	Hagersville	Hespeler
Haldimand Quarries & Construction Ltd.	137 Wellington St. W., Toronto	Hagersville
Kingston Penitentiary	Box 22, Kingston	Hagersville
Kirkfield Crushed Stone Ltd.	2700 Dufferin St., Toronto	Kingston
Lapierre, M. C.	1949—8th Ave., E., Owen Sound	Kirkfield
Law, R. E. Crushed Stone Ltd.	Port Colborne	Owen Sound
Limestone Products Ltd.	1109 Millwood Rd., Toronto	Port Colborne
Marlhill Mines Ltd.	Thorold	N. Orillia Tp.
McDonald, A. G.	Bronte	Marlbank
McGinnis & O'Connor	394 King St., Kingston	Lake Ontario
Mica & Stone Products	Bancroft	Pittsburg Tp.
Mitchell, William	Limehouse	Bancroft
North American Cyanamid Ltd.	Niagara Falls	Limehouse
Ontario Rock Co. Ltd.	2 College St., Toronto	Ingersoll
Pembroke, Town of	Pembroke	Belmont Tp.
Queenston Quarries Ltd. (*)	72 Sun Life Bldg., Hamilton	Pembroke
Verona Rock Products Ltd.	Verona	St. Davids
Walker Bros.	Box 586, Thorold	Verona
Webman, John	578 Division St., Kingston	Stamford Tp.
Welland Crushed Stone & Building Co.	R.R. 2, Niagara Falls	Kingston Tp.
		Stamford Tp.
MANITOBA—		
Building Products & Coal Co. Ltd.	111 Christie St., Winnipeg	Inwood
Gillis Quarries Ltd.	Richard & Spruce Streets, Winnipeg	Garson
Tyndall Quarry Co. Ltd. (*)	1591 Erin St., Winnipeg	Garson
Winnipeg, City of	223 James Ave., Winnipeg	Stoney Mountain
Winnipeg Supply & Fuel Co. Ltd.	812 Boyd Bldg., Winnipeg	Moosehorn, Stonewall
ALBERTA—		
Errico, M.	Cadomin	Cadomin
Loder's Lime Co. Ltd.	Kananaskis, Exshaw P.O.	Kananaskis
Summit Lime Works Ltd.	Box 273, Lethbridge	Lethbridge
BRITISH COLUMBIA—		
Agassiz Lime Quarry	Box 178, Agassiz	New Westminster M.D.
Beale Quarries Ltd.	744 West Hastings St., Vancouver	Van Anda
British Columbia Department of Highways	Victoria	Various
Canadian Pacific Railway Co.	Montreal, Quebec	Golden M.D.
Consolidated Mining & Smelting Company of Canada Ltd.	Trail	Grand Forks
Cutter, Hiram & Ethel	Agassiz	Agassiz
Fernie, City of	Fernie	Fernie
Koeye Limestone Co.	Namu	Koeye River
Pacific Lime Co. Ltd.	602 Pacific Bldg., Vancouver	Blubber Bay

Marble

QUEBEC—		
Canadian Dolomite Co.	Portage-du-Fort	Portage-du-Fort
MAB Ltée.	77 Cremazie, Quebec	St-Joseph-de-Beauce
Missisquoi Stone & Marble Co. Ltd. (*)	Philipsburg	Philipsburg
Orford Marble Co. Ltd. (†)	65 Beaudet, St-Laurent	St-Laurent
Pulverized Products Ltd.	4820-4th Avenue, Rosemount, Montreal 36	St-Armand
ONTARIO—		
Silvertone Black Marble Quarries Ltd.	328 Waverley St., Ottawa	St. Albert
Stockloser, K. & Son	Madoc	Madoc
White Star Mines	Haliburton	Eagle Lake
BRITISH COLUMBIA—		
Marble & Associated Products	507 Ellice St., Victoria	Malahat

Sandstone

NOVA SCOTIA—		
Arsenault, F. W.	Antigonish	North Grant
Department of Highways	Halifax	Halifax
Dillman, Bros.	Admiral Rook	Hants Co.
Fairview Crushed Stone Ltd. (†)	637A Gottingen St., Halifax	Halifax
Wallace Quarries Ltd.	Wallace	Wallace
NEW BRUNSWICK—		
Read Stone Company Ltd. (†)	Sackville	Stonehaven
Smith, E. A. (*)	Shediac	Shediac
QUEBEC—		
Bissonnette, Alfred	Ville-St-Laurent, Montreal	Montebello
Blais, Joseph	32 Mont-Marie Ave., Lévis	St-Romuald
Cote & Forbes	Matane	Matane

DIRECTORY OF FIRMS—Continued

THE STONE QUARRYING INDUSTRY—Concluded

Sandstone—Concluded

Name	Head office address	Location
QUEBEC—Concluded		
Gagnon, L. P.	St-David-de-Lévis	St-David-de-Lévis
Peel Construction Co. Ltd.	Brampton	Trois-Pistoles
Rousseau, T. E.	105, Côte-de-la-Montagne, Quebec	New Carlisle
Sherbrooke, City of	Sherbrooke	Sherbrooke
Simard, Adjutor	Pointe-au-Pic	Pointe-au-Pic
Vezina, Joseph	St-Foy	St-Foy
ONTARIO—		
Austin Corner	Belfountain	Inglewood
Campbell Sandstone Quarries Ltd. (*)	Box C19, Westboro	Bells Corners
Kingston Silica Mines Ltd.	R.R. 6, Kingston	Kingston
Mather, E.	Glen Williams	Halton
McHarg, B.	Georgetown	Georgetown
Mountain Sandstone Quarry	Box 307, Georgetown	Inglewood
Norton, A. W.	Limehouse	Limehouse
Sinfield, E. W.	Cheltenham	Terra Cotta
Sykes Quarries	Young St., Georgetown	Glen Williams
BRITISH COLUMBIA—		
Consolidated Mining & Smelting Co. of Canada Ltd.	Trail	Kimberley

Slate

QUEBEC—		
Bombardier, Geo.	Kingsbury	Richmond
Thermo Coal Compound	7465, St-Denis, Montreal	Granby
Williamson & Crombie	Kingsbury	Kingsbury
BRITISH COLUMBIA—		
Brown, O. M.	1903 Lansdowne Rd., Victoria	Leachtown

THE STONE PRODUCTS INDUSTRY

Name of company	Location of Plant
PRINCE EDWARD ISLAND—	
Beck, Vere & Son	Main St., Montague
NOVA SCOTIA—	
Coughlan, James S., Marble and Granite Works	Simpson's Siding, Halifax
Elmac Co., The	Box 130, Amherst
Kelly Monumental Works	Bridgewater
Nictaux Granite Canada Limited	Middleton
Nixon's Granite Works	R.R. 3, Middleton
Steele, John D., & Sons	Commercial St., North Sydney
Tingley, Harold W.	13 Merkel St., Halifax
Tingley, J. A., Granite Works	Amherst
NEW BRUNSWICK—	
Kane, M. T., & Co. Ltd.	Westmoreland Rd., Saint John
Miramichi Granite & Marble Works	Chatham
St. Stephen Granite Works	Queen St., St. Stephen
Sherrard, T. F., & Son	135 Victoria St., Moncton
Stults Monument Works	Rothsay Ave., Saint John
QUEBEC—	
Anco Granites Limited	72 Fifth Ave., Iberville
Anderson, James	Beebe
Beaubien, Elzear & Fils Ltée Reg'd.	Ste-Hélène, Co. Kamouraska
Bergstrand, N.	Waterville
Berson, L. & Son	3834 St. Lawrence Blvd., Montreal
Braut, A.	3 Champlain St., Valleyfield
Brodie's Limited	9th Ave., Iberville
Brunet, J., Limitée	4485 Côte-des-Neiges, Montreal
Canadian Johns-Manville Co. Ltd.	Manville St., Asbestos
Caron, Eugene	Ste-Anne-de-Beaupré

DIRECTORY OF FIRMS—Continued

THE STONE PRODUCTS INDUSTRY—Continued

Name of company	Location of plant
QUEBEC—Concluded	
Chabot, J. Ray.....	Scott Junction, Co. Beauce
Chausse, Edouard & Fils.....	524 King St. West, Sherbrooke
Crete, James.....	190 Sophie St., Sorel
Dalceggio, F.....	4588 Chemin Côte-des-Neiges, Montreal
Daudelin, Rolland.....	1395 St. Antoine St., St-Hyacinthe
Ducharme, J. Maurice.....	257 Notre Dame St., Victoriaville
Electric Reduction Co. of Canada Ltd.....	Buckingham
Fortin, Dollard.....	St-David-de-Lévis
Gingras, Roch.....	Ste-Foy
Gignac, Joseph.....	St-Alban Village
Godin & Delisle.....	1253 St. Vallier St., Quebec
Gosselin, Omer.....	Beauceville Est.
Gosselin, Oscar.....	Rue Maisonneuve, Mégantic
Houde & Frère Engr.....	404 Notre-Dame, Cap-de-la-Madeleine
Jacques André.....	20 Desjardins St., Lévis
Jeune, E. H.....	Sutton
La Cie de Pierre de Taille Martineau Ltée.....	5000—13th Avenue, Rosemont, Montreal
Laforce, H. & Fils, Engr.....	1327 St. Valier, Quebec
Liben, A. M.....	12 Bagg Ave., Montreal
Parent, G. H.....	349 rue Montigny, St-Jérôme
Picard, Wilfred.....	3285 Desautels, Montreal
Provost, J. A.....	187 Belmont, Sherbrooke
Quebec Granite & Marble Reg'd.....	7877 Chateaubriand, Montreal
Quinlan, Harold Cut Stone Ltd.....	Wanklyn St., Ville La Salle
Rousseau, O., Engr.....	St-Fabien
Smith Bros. Memorial Art Ltd.....	1195 Ducharme St., Montreal
Smith Marble & Construction Co. Ltd.....	207 Van Horne Ave. W., Montreal
Stanstead Granite Quarries Co. Ltd.....	Beebe
St-Louis & Fils.....	Cap-St-Martin
Thuot & Denicourt.....	87 Fourth St., Iberville
Todoro & Bigras.....	Sherbrooke E., Montreal
Vincent, Chas. A., & Sons.....	5731 St. Denis St., Montreal
ONTARIO—	
Angers, B. & Son.....	140 Montreal Rd., Eastview
Ambroise Monuments.....	48 Alma St., Guelph
Ambroise, J. D.....	Montreal Road, Eastview
Bayview Memorial Co.....	Willow Cove
Brown, Geo., & Sons.....	473 Bronson Ave., Ottawa
Campbell, A. C.....	21 Bridge St. W., Belleville
Canadian Art Memorials.....	Joseph St., Port Credit
Canadian Cut Stone Co. (Louis H. Gavard).....	7 Isabella St., Ottawa
Canadian Gypsum Co. Limited.....	Oak St., Weston
Creber Son & Company.....	1333 St. Clair Ave. W., Toronto
Central Granite & Marble Works.....	1233 Dundas St. W., Toronto
Chesley Memorial Works.....	Chesley
Davis Monument Co.....	3205 Danforth Ave., Toronto
Eglinton Monumental Works.....	1702 Eglinton Ave. W., Toronto
Excelsior Granite & Marble Works.....	163 Pitt St. E., Windsor
Gladstone & Ross.....	388 East Brock St., Fort William
Geard Brothers.....	612 William St., London
Gypsum, Lime and Alabastine, Canada, Limited.....	Caledonia
Hardwick, H. G. & Son.....	676 King St. W., Hamilton
Hargrave's Monumental Works.....	Haileybury
Humberstone Cut Stone and Monument Works.....	590 King St., Humberstone
Insulation Products Ltd.....	Beechwood Drive, Toronto 6
Johnston & Cranston.....	1849 Yonge St., Toronto
Kilvington Granite Company.....	2A Caledonia Rd., Toronto
Kingsway Monument Works.....	3673 Dundas St., Toronto
Kitchener Monument Works.....	1015 King St. E., Kitchener
Laurin, J. P.....	95 George St., Ottawa
London Marble & Granite Co. Ltd.....	493 Richmond St., London
McIntosh Granite Company Ltd.....	1623 Yonge St., Toronto
McIntyre Monument Co.....	60 Danforth Ave., Toronto
McKay Cut Stone Co.....	63 Shalmar Ave., Forest Hill
McMillan Granite Co. Ltd.....	105 Ontario St., Sarnia
Memorial Company of Toronto.....	2299 Bloor St. W., Toronto
Memorial Craftsmen Co.....	429 Spadina Ave., Toronto
Monumental Art Co.....	2163 Dundas St. W., Toronto
National Cut Stone Limited.....	355 Logan Ave., Toronto
Ontario Marble Co. Ltd.....	Maria St., Peterborough
Orillia Monument Co.....	252 Coldwater Rd. W., Orillia
Patterson & Cornelius.....	428 Queenston Rd., St. Catharines
Pollock & Ingham.....	151 Main St., Galt
Rhodes Memorials Ltd.....	Box 61, Cayuga
Riggs Memorial Works.....	605 Queen St., Niagara Falls
The Ritchie Cut Stone Co., Ltd.....	203 New Toronto St., New Toronto
Rivercourt Memorials.....	296 O'Connor Drive, Toronto
Ronald, Wellington.....	Listowel
Sanderson, J. R., Marble Co.....	33 Peter St. S., Orillia
Sault Granite & Marble Works.....	715 Queen St. E., Sault Ste. Marie
Sinclair Cut Stone.....	Frid St., Hamilton
Sharp Bros. Cut Stone Company Limited.....	516 Kenilworth St. N., Hamilton
Skelton, E. J. & Son.....	Yonge St., Walkerton

DIRECTORY OF FIRMS—Continued

THE STONE PRODUCTS INDUSTRY—Concluded

Name of company	Location of plant
ONTARIO—Concluded	
Smith Monument Works.....	1539 Main St. E., Hamilton
Smith Monument Co.....	349 Weston Road, Toronto
Spun Rock Wools Limited.....	65 Ormond St., Thorold
Standard Stone Company, Limited.....	1704 Howard Ave., Windsor
Strathroy Granite & Marble Co. Ltd.....	Strathroy
Sudbury Memorial Works.....	453 Arnley St., Sudbury
Thomson Monument Co. Ltd.....	862 Dupont St., Toronto
Twin City Monument Company.....	541 King St. E., Kitchener
Wardell Monument Works.....	2696 Dundas St. W., Toronto
Wilcox Granite Co.....	Plains Road, Hamilton
MANITOBA—	
Brooke, J. H. & Sons.....	266 Main St., Winnipeg
Brunet, Joseph O.....	26 Lyndale Drive., Norwood
Cassan Monumental Co.....	1417 Rosser Ave., Brandon
Guinn & Simpson Company Limited.....	52 Tupper St. N., Portage la Prairie
Hooper's Memorial Co.....	481 Notre Dame Ave., Winnipeg
MacIntyre, A. L.....	361 Bannatyne Ave., Winnipeg
Memorial Marble & Tile Co. Ltd.....	1180 Wall St., Winnipeg
Neepawa Marble & Granite Works.....	Neepawa
Somerville Marble & Granite Works.....	1417 Rosser Ave., Brandon
SASKATCHEWAN—	
Best Monumental Co.....	721 Caribou St. W., Moose Jaw
Glacial Rock Insulation Ltd.....	Township 17, Moose Jaw
Molaro Marble & Stone Works.....	23 St. & Pacific Ave., Saskatoon
Moose Jaw Marble & Granite Works Ltd.....	706 Athabasca St. E., Moose Jaw
Regina Monumental Co.....	2536 Railway St., Regina
Yorkton Monumental Works.....	20 Agricultural Ave., Yorkton
Young, Alex., Ltd.....	Scarth St. and 4th Ave., Regina
ALBERTA—	
Alberta Granite, Marble & Stone Co. Ltd.....	10702—101st St., Edmonton
Hart, Albert J.....	1821 Second St. E., Calgary
Maclean Granite Co.....	Red Deer
McDonald Granite Co. Ltd.....	2313 Second St. E., Calgary
Somerville Calgary Monumental Co.....	129—13th Ave., W., Calgary
BRITISH COLUMBIA—	
Art Monument Co. Ltd.....	609 East 16th Ave., Vancouver
Burnaby Monumental Works.....	2655 Patterson Ave., Burnaby
Chandler, W. R., Memorials & Western Granite Co.....	5495 Fraser St., Vancouver
Continental Marble Company Limited.....	1002 Georgia St. E., Vancouver
Forster Monumental Works.....	5525 Fraser St., Vancouver
Kingsway Monumental Works.....	3070 Kingsway St., Vancouver
Mortimer, J., & Son.....	George Road & Government St., Victoria
Stewart Monumental Works Ltd.....	1401 May St., Victoria
Westway's Monumental Works.....	143 Columbia St. E., New Westminster

DIAMOND DRILLING CONTRACTORS

Name of firm	Head office address
Allard Bros.....	Val-d'Or, Quebec
Albert, E.....	Box 134, Val-d'Or, Quebec
Anderson, Anton.....	20 Patricia Blvd., Timmins, Ontario
Andercheck, John M.....	61 Third Ave., Timmins, Ontario
Arno Diamond Drilling Co. Ltd.....	249 Algonquin Blvd. E., Timmins, Ontario
Baderski, Frank & Son.....	464 Algonquin Blvd. E., Timmins, Ontario
Baker, L. J.....	Box 520, Val-d'Or, Quebec
Bergeron Diamond Drilling Co.....	Box 386, Timmins, Ontario
Biladeau, Chatrand, Girard.....	Senneterre, Quebec
Boyles Bros. Drilling Co. Ltd.....	1291 Parker St., Vancouver, British Columbia
Brochu, W. C.....	Room 2, Richardson Bldg., Timmins, Ontario
Bourgeois, Larry.....	57 Laurier St., Bourlamaque, Quebec
Burry, Herbert.....	New Liskeard, Ontario
Burton, Archie S.....	352 Howey Crescent, Sudbury, Ontario
Connors, T. Diamond Drilling Co. Ltd.....	744 West Hastings St., Vancouver, British Columbia
Continental Diamond Drilling Co. Ltd.....	82 Perreault St. W., Rouyn, Quebec
Demorest Drilling Ltd.....	Noranda, Quebec
Developers of Canada Reg'd.....	Box 78, Val-d'Or, Quebec
Eco Exploration Co. Ltd.....	711 McArthur Bldg., Winnipeg, Manitoba
Edwards, Jack H.....	Red Lake, Ontario
Geraldton Diamond Drilling Co.....	Geraldton, Ontario
Globe Drilling & Exploration Co.....	Kenora, Ontario
Groleau Bros.....	40 Taschereau E., Rouyn, Quebec

DIRECTORY OF FIRMS—Continued

DIAMOND DRILLING CONTRACTORS—Concluded

Name of firm	Head office address
Grondin, M.	Box 2013 Val-d'Or, Quebec
Heath & Sherwood	6 Duncan Ave., Kirkland Lake, Ontario
Hawkins, H.	11 Pine St. N., Timmins, Ontario
Hudson Diamond Drilling Co. Ltd.	Noranda, Quebec
Houle-Truneau	Bourlamaque, Quebec
Inspiration Mining & Development Co. Ltd.	184 Bay St., Toronto, Ontario
Jones & Bradley Ltd.	Drawer 1050, Noranda, Quebec
Keyes Construction Co. Ltd.	260 Industrial Ave., Vancouver, British Columbia
Kirk, J. B.	Nakina, Ontario
Kuntz, H. J.	Box 300, Malartic, Quebec
Labine Bros.	McKenzie Island, Quebec
LaRoque, T. E.	10 Frontenac St., Val-d'Or, Quebec
Lee & Euler	Box 123, Red Lake, Ontario
Lipasti, E.	Larder Lake, Ontario
Matheson Drilling & Exploration	Matheson, Ontario
Mikelsait, J. A.	Box 127, Rouyn, Quebec
Morissette Diamond Drilling Ltd.	Box 440, Hailebury, Ontario
McCall Diamond Drilling Co.	Box B, Geraldton, Ontario
Midwest Diamond Drilling Co. Ltd.	Flin Flon, Manitoba
McCinn, J. R.	5 Elgin St., Sudbury, Ontario
National Diamond Drilling Co. Ltd.	Box 508, Rossland, British Columbia
Niemetz, Bros.	Red Lake, Ontario
Ontario Diamond Drilling Co. Ltd.	203 Mackey Bldg., Sudbury, Ontario
Pearson, A. H.	369 7th Ave., Noranda, Quebec
Poulson & Newman	26 Rowan Ave., Kirkland Lake, Ontario
Portelance, A.	626 Leslie Ave., Port Arthur, Ontario
Prochick, M. J.	McKenzie Island, Ontario
Robinson Contracting Co. Ltd.	804-850 Hastings St. W., Vancouver, British Columbia
Rowan, Angus	74½ Fifth Ave., Timmins, Ontario
Scarboro, George	46 Carlin Ave., Timmins, Ontario
Smith & Travers Co. Ltd.	208 Walnut St., Sudbury, Ontario
Sudbury Diamond Drilling Co. Ltd.	184 Bay St., Toronto, Ontario
Territories Exploration & Drilling	Box 149, Yellowknife, Northwest Territories
Thompson Drilling & Mining Development Co. Ltd.	4 North Ave., Flin Flon, Manitoba
Timmins Diamond Drilling Development Co. Ltd.	174 Maple St. N., Timmins, Ontario
Traynor Diamond Drilling Co. Ltd.	15 Toronto St., Toronto, Ontario
Tremblay, Paul E.	Rouyn, Quebec
Wilson, A.	Box 270, Noranda, Quebec
Zagowski, Joseph	McKenzie Island, Ontario

FUEL WELL DRILLING CONTRACTORS

NOVA SCOTIA—	
Kennedy, O. V.	Bridgetown
QUEBEC—	
Boileau, E.	1080 Osborne St., Montreal
ONTARIO—	
Ashton, J. L.	550 King St. W., Chatham
Culver, Marvin & Son	R.R. 2, Selkirk
Culver & Havill	Stevensville
Davidson, Fred L.	Wingham
Demaray, C.	Kerrwood
Dennis, G.	R.R. 2, Selkirk
Dolphin Bros.	Saulsbury St., Strathroy
Dominion Petroleum Co. Ltd.	Glencoe
Elk Development Syndicate	Box 82, Bradford, Pa., U.S.A.
Emerson, H. L.	R.R. 1, Dunnville
Emerson & Rose	Wainfleet
Evans, Harry	Tillsonburg
Garringer, W.	Dunnville
Harris, W.	Welland
Heal, A.A.	Box 264, Watford
Hodgson, Roy	Cayuga
Hoover & Donald	Hagersville
House, C. C.	Stevensville
Irving, D.	509 Queen St., Dunnville
Jackson, P. L. & Co.	211 George St., Dunnville
Kiser Bros.	Hicks Bldg., Chatham
Lymburner Bros. & Webber	Dunnville
Mandley, R.	Dunnville
McKillop, Wm. & Son	Box 102, Hamilton
McLister, J. J.	Dunnville
Nagel, Elmer	Stevensville
Nauman, Bros.	Fisherville
Patterson & Culver	Box 93, Dunnville
Patterson Gas Co. Ltd.	Jamestown, N.Y., U.S.A.
Perkins, J. E.	Dunnville
Renwick, S.	Bright

DOMINION BUREAU OF STATISTICS

DIRECTORY OF FIRMS—Concluded

FUEL WELL DRILLING CONTRACTORS—Concluded

Name of firm	Head office address
Ricker, Arthur.....	Canboro
Shank Bros.....	R.R. 2, Selkirk
Stewart, E.....	R.R. 3, Jarvis
Stubble, H. H.....	225 Grand Ave. E., Chatham
Swayze & Nauman.....	R.R. 5, Simcoe
Swent, W. N.....	Selkirk
Warren, G.....	R.R. 1, Canboro
Werner, D. E.....	Fisherville
Wilson-Sullivan Development Co.....	112 S. Christina St., Sarnia
Windover, Wm.....	R.R. 2, Sarnia
MANITOBA—	
Coyle, D. J.....	796 McDermot Ave., Winnipeg
SASKATCHEWAN—	
Clark Drilling Co.....	Waterous
Creelman, R. E. & Son.....	1113 Ave. B. North, Saskatoon
Northern Development Co. Ltd. (N.P.L.).....	Lloydminster
ALBERTA—	
Bush, O. D.....	231 8th Ave. West, Calgary
Canokla Drillers Ltd.....	1010 Security Bldg., Windsor, Ontario
Can-Tex Drilling Co. Ltd.....	617 Lancaster Bldg., Calgary
Commonwealth Drilling Co. Ltd.....	4 Clarence Block, Calgary
Culbert & Hayden.....	Black Diamond
Drilling Contractors Ltd.....	902 Lancaster Bldg., Calgary
G & C Drilling Co.....	Millarville
General Petroleum Ltd.....	509 8th Ave. West, Calgary
Kartmeyer, F.....	Black Diamond
Machinery Depot Ltd.....	1029 10th Ave. West, Calgary
McAllister, R. W.....	527 1st Ave. West, Calgary
National Petroleum Corp. Ltd.....	401 Leeson-Lineham Bldg., Calgary
Newell & Chandler Ltd.....	203 Wilson Electric Bldg., Calgary
Regent Drilling Co. Ltd.....	Vermilion
Roxana Oils Co. Ltd.....	408 Lancaster Bldg., Calgary
Union Drilling & Development Co. Ltd.....	403 Lancaster Bldg., Calgary

EXPLANATORY NOTES

Method of Computing Quantities and Values of the Mineral Production of Canada in 1946.

Arsenic.—White arsenic (As_2O_3) produced at Canadian plants at its sales value.

Bismuth.—(a) Recoverable metal in silver-lead-bismuth bullion shipped to foreign smelters for refining at an arbitrary price; (b) Bismuth metal produced at Canadian smelters valued at the average New York price for the year.

Cadmium.—Canadian refinery production valued at the amount received by shippers.

Cobalt.—Cobalt content of the various cobalt products sold by the Ontario smelters producing these products added to the cobalt content of ores and residues exported for treatment in foreign smelters; the value given is the gross amount received by the shippers.

Copper.—(a) Recoverable copper in ores and concentrates exported valued at the average New York price for the year, in Canadian funds; (b) Copper in blister copper made at Manitoba; Ontario and Quebec smelters valued at the average London price for the year in Canadian funds; (c) Copper in copper-nickel matte exported from Canadian smelters valued at an arbitrary price agreed upon between the Dominion Bureau of Statistics and the Ontario Department of Mines.

The price per pound used throughout 1946 to evaluate Canadian production was that agreed upon by the Canadian Producers and the British Government, with necessary adjustments.

Gold.—Gold in bullion produced and the recoverable gold in all other Canadian mine products is valued at the standard rate of \$20·671834 per fine ounce until the end of 1930. For succeeding years, unless otherwise specified, gold is valued at the average price on world markets transposed to Canadian funds.

Lead.—Recoverable lead in ores exported from Canada added to lead contained in base bullion made at Trail, B.C., valued at the average London quotations for the year in Canadian funds. The average price used for 1946 was that agreed upon by contract between Canadian producers and the British Government, with necessary adjustments.

Nickel.—(a) Refined and electrolytic nickel produced at Canadian refineries valued in Canadian funds at the average price obtained for such products sold during the year; (b) Nickel in oxides and salts sold from Canadian smelters and refineries at its total selling value in Canadian funds in the form in which it was sold; (c) Nickel in matte exported from Canada valued at an arbitrary figure agreed upon by the Ontario Department of Mines and the Dominion Bureau of Statistics (representative of the value of the nickel in matte form).

Platinum Group Metals.—Recoverable metals in smelter products and placer platinum at the average London price and transposed to Canadian funds.

Silver.—Silver bullion produced and the recoverable silver in other primary plant products, and the recoverable silver in Canadian ores exported, at the average New York price for foreign ores in Canadian funds for the refined metal.

Tellurium and Selenium.—Refinery production valued at the average New York price for the year.

Zinc.—Refined zinc produced by the Consolidated Mining and Smelting Co., Ltd., at Trail B.C., and by the Hudson Bay Mining and Smelting Co., Ltd., Flin Flon, Manitoba, and the recoverable zinc in concentrates exported, valued at the average monthly price quoted in London, in Canadian funds.

The average price used for 1946 was that agreed upon by contract between Canadian producers and the British Government, with necessary adjustments.

Coal.—Output tonnage evaluated pro rata according to income from sales.

Other Non-Metallic Minerals, Clay Products and Structural Materials.—Shipments during the year at their respective sales values.

Imports.—Statements and quantities and values are based on the declarations of importers, as subsequently checked by government officials.

The value of imported merchandise is the fair market value or the price thereof when sold for home consumption in the principal markets of the country whence and at the time when the same were exported directly to Canada. The price and value of the goods in every case are stated as in condition packed ready for shipment, the fair value being shown in the currency of the country of export, and the selling price to the purchaser in Canada shown in the actual currency in which the goods were purchased. In the case of goods that are the manufacture or produce of a foreign country, the currency of which is substantially depreciated, the value stated is the value that would be placed on similar goods manufactured or purchased in the United Kingdom and imported from that country, if such similar goods are made or produced there. If similar goods are not made or produced in the United Kingdom, the value stated is the value of similar goods made or produced in any European country, the currency of which is not substantially depreciated.

Exports.—Statements of quantities and values are based on the declaration of exporters as subsequently checked by government officials.

The value of exports of Canadian merchandise is the actual cost or the value at the time of exportation at the points in Canada whence originally shipped.

Weight.—Weight, where shown in imports and exports is the net weight of the goods, excluding the weight of the covers or receptacles, except in the cases of certain goods, as provided in the tariff.

The expression "ton" means 2,000 pounds, and cwt. 100 pounds, avoirdupois. Where other units of quantity are used, imperial standards apply.

Unless otherwise arranged, the data relating to the operations of less than three firms producing the same commodity or mineral are not published separately.

LIST OF PUBLICATIONS

(Mining, Metallurgical and Chemical Section)

The letter (A) means annual and (M) means monthly.

Mining—

Subscription price for complete mining series, listed under this heading, with exception of **Coal Statistics**, \$7 a year.

Subscription price for all mining reports, and chemical and metallurgical reports (iron and steel, non-ferrous metals and non-metallic minerals) listed under **MANUFACTURING INDUSTRIES**, \$15 a year.

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*Canada. Statistics, from 1867 to 1901.
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CANADA DEPARTMENT OF TRADE AND COMMERCE
DOMINION BUREAU OF STATISTICS
MINING, METALLURGICAL AND CHEMICAL SECTION

*Annual report on the
mineral production of Canada.*

MINERAL STATISTICS OF CANADA

1947-1948

Published by Authority of the Rt. Hon. C. D. Howe, M.P.,
Minister of Trade and Commerce



OTTAWA
EDMOND CLOUTIER, C.M.G., O.A., D.S.P.
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
CONTROLLER OF STATIONERY

1952

Price, \$1.00

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PREFACE

Annual reports on the Mineral Production of Canada have been published since 1886. The first reports were prepared by the Geological Survey of Canada, later by the Mines Branch of the Department of Mines, and since 1921 by the Dominion Bureau of Statistics. Historical tables and a chronological record of important events were included in the report for 1946.

The present report contains data for 1947 and 1948 on the production from Canada's metal and non-metal mines and quarries, oil and gas wells, and plants producing lime, products from Canadian clays, and cement. It contains tables showing the salaries and wages paid, the number of employees, the amounts spent on fuel and power, the power-producing equipment installed, and the process supplies purchased.

The report is divided into ten chapters; the first is a complete summary, and the remaining chapters conform to the nine major groups into which the Canadian mining industry is divided. A list of all mining companies which reported to the Bureau for 1948 is added.

The total value of the mineral production of Canada, as shown in this report, includes all metals and minerals with the exception of those obtained from pitchblende ores which are confidential.

As in previous years, the Bureau co-operated with the Mines Departments of the provinces of Nova Scotia, Quebec, Ontario, Manitoba, Saskatchewan and British Columbia in the collection of these statistics. Forms were filed in duplicate by the reporting companies, thereby saving the operator extra work, and resulting in uniform totals for Dominion and Provincial statistical bureaux.

The thanks of the Bureau are tendered to the federal Department of Mines and Resources and to the mine and smelter operators for assistance given and information made available. Railway and other transportation companies, as well as smelter operators outside of Canada, have also furnished data, the receipt of which is gratefully acknowledged.

This report has been prepared by Mr. A. R. Deir, Mining Statistician.

HERBERT MARSHALL,
Dominion Statistician.

DOMINION BUREAU OF STATISTICS,
OTTAWA, MAY 1, 1950

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ANNUAL REPORT

on the

MINERAL STATISTICS OF CANADA

During the Calendar Year, 1947-1948

CHAPTER ONE

Greater volume and higher prices brought the value of Canada's mineral production in 1948 to a record total of \$820.2 millions, an increase of 27.2 per cent over the corresponding value of \$644.8 millions recorded for the preceding year. The tonnage of ore mined and rock quarried in 1948 increased about 10 per cent from that of 1947. The output value of metallics increased 23.5 per cent, mineral fuels advanced 44.6 per cent, other non-metallics gained 22.8 per cent and the value of structural materials was higher by 24.3 per cent.

A higher output was shown for each of the provinces. In Ontario the increase was 18 per cent to \$294 millions and in Quebec the gain was 32 per cent to \$152 millions. Advances in the other provinces were: British Columbia, 27 per cent to \$148 millions; Nova Scotia, 64 per cent to \$56 millions; Alberta, 38 per cent to \$93 millions; Saskatchewan, 6 per cent to \$34 millions; Manitoba, 43 per cent to \$26 millions; Northwest Territories, 57 per cent to \$4.3 millions and Yukon 103 per cent to \$4.3 millions.

The value of metals in 1948 reached a new high of \$488 millions compared with \$395 millions in 1947. The quantities of copper, lead, zinc, nickel and other base metals increased, but the rises in market prices accounted for most of the gains in output values. Refined electrolytic copper was quoted at 23.2 cents per pound, approximately two cents per pound higher than in 1947. Lead advanced 4½ cents to reach 21.5 cents per pound. Electrolytic zinc rose to 17.5 cents per pound for a gain of 2¼ cents on the yearly average and electrolytic nickel rose to 40 cents per pound or 5 cents more than quotations which had prevailed for some months. Gold production of 3,529,600 troy ounces was an increase of nearly 15 per cent over the preceding year. The Emergency Gold Mining Assistance Act was a definite help in reviving the industry which was staggering under the blows of rising costs while the price of the product remained fixed. Gold output in 1948 was less than in each of the years from 1936 to 1943 inclusive, and it was 34 per cent below the record of 5,345,000 ounces attained in 1941. Silver production of 16 million ounces was recovered from base metal and gold ores, only a small quantity was from minerals classed as silver ores. Available labour for the metal mines showed a favorable upward trend.

The mineral fuels were valued at \$159.7 millions in 1948, the major portion being coal worth \$106.7 millions. Coal from Alberta mines totalled 8.1 million tons and from Nova Scotia 6.4 million tons. Attention was focused on the spectacular development of the crude oil fields of Leduc, Woodbend and Redwater in Alberta. Of Canada's production of 12,286,000 barrels of crude petroleum, over 88 per cent came from Albertan wells. Natural gas production increased and the known reserves grew as development drilling progressed.

Shipments of industrial minerals in 1948 were worth \$67.1 millions. Asbestos from Quebec, the world's principal source of supply amounted to 716,769 tons valued at an all time high of \$42.2 millions. The gypsum industry again broke its previous record by producing 3,216,000 tons valued at \$5.5 millions. A large portion of the 741,000 tons of salt produced was used in the manufacture of chemicals. The peat moss industry maintained a \$2 million level in value of shipments. Saskatchewan shipped about 153,700 tons of sodium sulphate during the year. Sulphur in the form of pyrite and sulphuric acid was only slightly greater in quantity.

Continued high demand for structural materials raised the production value to a record of \$105.1 millions. Cement shipments amounted to 14.1 million barrels worth \$28.2 millions. Clay products, which include brick, tile, pottery, etc., made from Canadian clay, were valued at \$17.6 millions. Lime production exceeded one million tons. Stone quarried was approximately 11.7 million tons worth \$17.9 millions. Road construction used a large portion of the 68.7 million tons of sand and gravel excavated in 1948.

The mineral industry during 1948 recorded an average employment of 112,855 persons compared with 104,519 in 1947. Salaries and wages paid amounted to \$282,001,582 compared to \$229,560,604 in the preceding year. In addition to the aforementioned employees, there were 2,788 persons in administrative and office work at head offices or at locations in Canada other than the mines or plants.

TABLE 1. Mineral Production, by Kinds, 1947 and 1948

		1947		1948	
		Quantity	Value	Quantity	Value
			\$		\$
METALLICS					
Antimony.....	lb.	1,150,463	384,255	310,062	113,173
Arsenic (As ₂ O ₃).....	lb.	787,736	49,348	1,161,996	82,909
Barium.....	lb.	568	1,273	2,552	7,988
Bismuth.....	lb.	284,372	560,213	240,242	480,484
Cadmium.....	lb.	718,534	1,235,879	766,090	1,398,114
Calcium.....	lb.	602,665	642,607	895,203	1,723,266
Chromite.....	ton	2,162	42,159	1,715	33,568
Cobalt.....	lb.	572,673	875,644	1,544,852	2,029,178
Copper.....	lb.	451,723,093	91,541,888	481,463,966	107,159,756
Gold.....	fine oz.	3,070,221	107,457,735	3,529,608	123,536,280
Iron ore.....	ton	1,919,366	9,313,201	1,337,244	7,487,611
Lead.....	lb.	323,336,687	44,200,124	334,501,917	60,344,146
Manganese ore.....	ton	225	7,875	3	88
Magnesium.....	—	—	—	—	—
Molybdenite concentrates.....	lb.	759,795	309,048	304,762	137,143
Nickel.....	lb.	237,251,496	70,650,764	263,479,163	86,904,235
Palladium, rhodium, iridium, etc.....	fine oz.	110,332	4,387,740	148,343	6,295,132
Platinum.....	fine oz.	94,570	5,582,467	121,404	10,622,850
Pitchblende products.....	—	—	Not available	—	—
Selenium.....	lb.	501,090	937,038	390,894	781,788
Silver.....	fine oz.	12,504,018	9,002,893	16,109,982	12,062,487
Tellurium.....	lb.	9,194	16,090	11,425	19,994
Tin.....	lb.	714,198	517,794	691,332	688,567
Titanium ore.....	ton	7,104	36,036	4,441	21,091
Tungsten concentrates.....	lb.	496,023	680,792	1,046,160	1,046,160
Zinc.....	lb.	415,725,826	46,686,010	468,327,036	65,237,956
Total Metallics.....	—	—	395,118,878	—	488,233,964
NON-METALLICS FUELS					
Coal.....	ton	15,868,866	77,475,017	18,449,689	106,684,008
Natural gas.....	M cu.ft.	52,656,567	13,429,558	58,603,269	15,632,507
Peat.....	ton	95	950	85	850
Petroleum.....	bbl.	7,692,492	19,575,682	12,286,660	37,418,895
Total Fuels.....	—	—	110,481,207	—	159,736,260
OTHER NON-METALLICS					
Asbestos.....	ton	661,821	33,005,748	716,769	42,231,475
Barite.....	ton	128,675	1,380,753	95,747	1,073,380
Diatomite.....	ton	103	2,677	46	1,487
Feldspar.....	ton	36,104	381,360	54,851	564,437
Fluorspar.....	ton	7,186	209,886	11,340	344,834
Garnet schist.....	ton	1	300	2	200
Graphite.....	ton	2,398	207,364	2,539	239,931
Grindstones.....	ton	335	21,475	220	20,100
Gypsum.....	ton	2,496,984	4,734,853	3,216,809	5,548,245
Iron oxides.....	ton	13,418	258,322	13,181	203,391
Magnetitic dolomite and brucite ²	—	—	1,238,948	—	1,724,489
Mica.....	lb.	8,318,755	200,903	7,902,303	219,948
Mineral waters.....	gal.	198,952	117,440	192,539	110,259
Nepheline syenite.....	ton	66,995	341,635	74,386	506,462
Peat moss.....	ton	80,019	2,279,821	89,800	2,767,878
Quartz.....	ton	1,836,428	1,796,612	2,017,262	2,082,573
Salt.....	ton	728,545	4,436,930	741,261	4,836,028
Silica brick.....	M	3,094	193,998	3,464	393,821
Soapstone (including some talc).....	ton	26,709	266,377	28,780	309,823
Sodium carbonate.....	ton	163	1,793	—	—
Sodium sulphate.....	ton	163,290	1,793,043	153,698	2,136,276
Sulphur.....	ton	221,781	1,822,867	229,463	1,836,358
Total Other Non-metallics.....	—	—	54,693,105	—	67,151,395
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS					
Clay products (brick, tile, etc.).....	—	—	14,486,189	—	17,629,048
Cement.....	bbl.	11,936,245	21,968,909	14,127,123	28,264,987
Lime.....	ton	977,413	8,542,507	1,053,584	10,655,062
Sand and gravel.....	ton	56,789,569	23,114,431	68,670,863	30,629,596
Stone.....	ton	10,889,388	16,464,749	11,696,643	17,948,553
Total Clay Products and Other Structural Materials.....	—	—	84,576,785	—	105,127,246
Grand Total.....	—	—	644,869,975	—	820,248,865

1. Not available for publication.

2. Includes magnesium metal.

TABLE 2. Mineral Production, by Provinces, 1947

No.			Nova Scotia	New Brunswick	Quebec	Ontario
METALS						
1	Antimony.....	lb.	-	-	-	-
2		\$	-	-	-	-
3	Arsenic.....	lb.	-	-	787,736	-
4		\$	-	-	49,348	-
5	Barium.....	lb.	-	-	-	568
6		\$	-	-	-	1,278
7	Bismuth.....	lb.	-	-	15	-
8		\$	-	-	30	-
9	Cadmium.....	lb.	-	-	-	-
10		\$	-	-	-	-
11	Calcium.....	lb.	-	-	-	602,665
12		\$	-	-	-	642,607
13	Chromite.....	ton	-	-	2,162	-
14		\$	-	-	42,159	-
15	Cobalt.....	lb.	-	-	-	572,673
16		\$	-	-	-	875,644
17	Copper.....	lb.	-	-	85,121,428	227,867,613
18		\$	-	-	17,356,259	46,018,544
19	Gold.....	oz.	1,271	-	598,127	1,944,819
20		\$	44,485	-	20,934,445	68,068,665
21	Iron ore.....	ton	-	-	-	1,919,366
22		\$	-	-	-	9,313,201
23	Lead.....	lb.	-	-	8,175,577	282,765
24		\$	-	-	1,117,601	38,654
25	Manganese ore.....	ton	-	225	-	-
26		\$	-	7,875	-	-
27	Magnesium.....	-	-	-	1	-
28	Molybdenite.....	lb.	-	-	759,795	-
29		\$	-	-	309,048	-
30	Nickel.....	lb.	-	-	-	237,251,496
31		\$	-	-	-	70,650,764
32	Palladium rhodium, etc.	oz.	-	-	-	110,332
33		\$	-	-	-	4,387,740
34	Platinum.....	oz.	-	-	-	94,570
35		\$	-	-	-	5,582,467
36	Pitchblende.....	\$	-	-	-	-
37	Selenium.....	lb.	-	-	181,573	146,406
38		\$	-	-	339,542	273,779
39	Silver.....	oz.	97	-	2,134,189	2,342,032
40		\$	70	-	1,536,616	1,686,263
41	Tellurium.....	lb.	-	-	-	6,169
42		\$	-	-	-	10,796
43	Tin.....	lb.	-	-	-	-
44		\$	-	-	-	-
45	Titanium ore.....	ton	-	-	7,104	-
46		\$	-	-	36,036	-
47	Tungsten (concentrates).....	lb.	-	-	-	-
48		\$	-	-	-	-
49	Zinc.....	lb.	-	-	69,462,925	-
50		\$	-	-	7,800,686	-
51	Total Metals.....	\$	44,535	7,875	49,521,770	207,550,402
NON-METALLIC FUELS						
52	Coal.....	ton	4,118,196	345,194	-	-
53		\$	27,175,251	2,301,511	-	-
54	Natural gas.....	M cu. ft.	-	489,810	-	7,785,921
55		\$	-	279,790	-	5,334,991
56	Peat.....	ton	-	-	-	95
57		\$	-	-	-	950
58	Petroleum crude.....	bbl.	-	23,129	-	131,295
59		\$	-	32,381	-	350,000
60	Total Fuels.....	\$	27,175,251	2,613,682	-	5,685,941

1. Not available for publication.

TABLE 2. Mineral Production, by Provinces, 1947

Manitoba	Saskatchewan	Alberta	British Columbia	Northwest Territories	Yukon	Canada	No
--	--	--	1,150,463	--	--	1,150,463	1
--	--	--	384,255	--	--	384,255	2
--	--	--	--	--	--	787,736	3
--	--	--	--	--	--	49,348	4
--	--	--	--	--	--	568	5
--	--	--	--	--	--	1,278	6
--	--	--	284,357	--	--	284,372	7
--	--	--	560,183	--	--	560,213	8
75,030	97,866	--	545,638	--	--	718,534	9
129,052	168,330	--	938,497	--	--	1,235,879	10
--	--	--	--	--	--	602,665	11
--	--	--	--	--	--	642,607	12
--	--	--	--	--	--	2,162	13
--	--	--	--	--	--	42,159	14
--	--	--	--	--	--	572,673	15
--	--	--	--	--	--	875,644	16
30,631,768	66,301,926	--	41,800,358	--	--	451,723,093	17
6,245,817	13,518,963	--	8,402,305	--	--	91,541,888	18
72,906	93,747	78	249,011	62,517	47,745	3,070,221	19
2,551,710	3,281,145	2,730	8,715,385	2,188,095	1,671,075	107,457,735	20
--	--	--	--	--	--	1,919,366	21
--	--	--	--	--	--	9,313,201	22
--	--	--	313,733,089	--	1,145,256	323,336,687	23
--	--	--	42,887,313	--	156,556	44,200,124	24
--	--	--	--	--	--	225	25
--	--	--	--	--	--	7,875	26
--	--	--	--	--	--	1	27
--	--	--	--	--	--	759,795	28
--	--	--	--	--	--	309,048	29
--	--	--	--	--	--	237,251,496	30
--	--	--	--	--	--	70,650,764	31
--	--	--	--	--	--	110,332	32
--	--	--	--	--	--	4,387,740	33
--	--	--	--	--	--	94,570	34
--	--	--	--	--	--	5,582,467	35
--	--	--	--	--	--	--	36
33,653	139,458	--	--	--	--	501,090	37
62,931	260,786	--	--	--	--	937,038	38
424,365	1,282,546	16	5,903,367	45,355	372,051	12,504,018	39
305,543	923,433	12	4,250,424	32,655	267,877	9,002,893	40
588	2,437	--	--	--	--	9,194	41
1,029	4,265	--	--	--	--	16,090	42
--	--	--	714,198	--	--	714,198	43
--	--	--	517,794	--	--	517,794	44
--	--	--	--	--	--	7,104	45
--	--	--	--	--	--	36,036	46
--	--	--	496,023	--	--	496,023	47
--	--	--	680,792	--	--	680,792	48
27,753,131	65,503,602	--	253,006,168	--	--	415,725,826	49
3,116,677	7,356,054	--	28,412,593	--	--	46,686,010	50
12,412,759	25,512,976	2,742	95,749,541	2,220,750	2,095,508	395,118,878	51
--	--	--	--	--	--	--	--
--	1,571,147	8,070,430	1,763,899	--	--	15,868,866	52
--	2,928,812	36,439,158	8,630,285	--	--	77,475,017	53
--	274,193	44,106,643	--	--	--	52,656,567	54
--	68,891	7,745,886	--	--	--	13,429,558	55
--	--	--	--	--	--	95	56
--	--	--	--	--	--	950	57
--	540,117	6,770,477	--	227,474	--	7,692,492	58
--	614,156	18,078,907	--	500,238	--	19,575,682	59
--	3,611,859	62,263,951	8,630,285	500,238	--	110,481,207	60

1. Not available for publication.

TABLE 2. Mineral Production, by Provinces, 1947 - Con.

No.		Nova Scotia	New Brunswick	Quebec	Ontario
OTHER NON-METALLICS					
1	Asbestos	ton	-	661,821	-
2	.....	\$	-	33,005,748	-
3	Barite	ton	125,760	-	40
4	.....	\$	1,353,705	-	398
5	Diatomite	ton	44	-	-
6	.....	\$	1,205	-	-
7	Feldspar	ton	-	29,146	6,958
8	.....	\$	-	320,964	60,396
9	Fluorspar	ton	-	-	7,186
10	.....	\$	-	-	209,886
11	Garnet rock	ton	-	-	1
12	.....	\$	-	-	300
13	Graphite	ton	-	-	2,398
14	.....	\$	-	-	207,364
15	Grindstone	ton	-	-	-
16	.....	\$	335	-	-
17	Gypsum	ton	2,137,704	65,939	155,249
18	.....	\$	2,303,275	711,535	671,548
19	Iron oxides	ton	-	13,360	-
20	.....	\$	-	257,621	-
21	Magnesitic dolomite and brucite	\$	-	1,238,948	-
22	Mica	lb.	-	3,272,293	3,238,462
23	.....	\$	-	120,712	55,951
24	Mineral water	gal.	-	195,452	3,500
25	.....	\$	-	116,840	600
26	Nepheline syenite	ton	-	-	66,995
27	.....	\$	-	-	341,635
28	Peat moss	lb.	-	42,584,930	16,499,450
29	.....	\$	5,054,700	383,795	170,443
30	Quartz	ton	9,146	226,050	1,442,341
31	.....	\$	55,393	638,521	949,210
32	Salt	ton	40,107	-	633,766
33	.....	\$	416,332	-	3,132,165
34	Silica brick	M	1,983	-	1,111
35	.....	\$	181,841	-	12,157
36	Soapstone and talc	ton	-	13,279	-
37	.....	\$	-	123,467	-
38	Sodium sulphate	ton	-	-	-
39	.....	\$	-	-	-
40	Sodium carbonate	ton	-	-	-
41	.....	\$	-	-	-
42	Sulphur	ton	-	48,688	15,931
43	.....	\$	-	187,112	159,310
44	Talc	ton	-	-	13,430
45	.....	\$	-	-	142,910
46	Total Other Non-metallics	\$	4,311,751	793,953	36,393,728
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS					
47	Clay products	\$	752,126	381,184	4,257,423
48	Cement	bbl.	-	-	5,289,528
49	.....	\$	-	5,453,407	3,529,438
50	Lime	ton	-	9,351,477	6,219,993
51	.....	\$	20,938	349,038	490,681
52	Sand and gravel	ton	2,966,680	295,178	2,903,491
53	.....	\$	3,464,347	16,537,303	20,230,499
54	Stone	ton	1,363,363	4,877,339	9,034,131
55	.....	\$	379,622	4,266,956	4,844,647
56	Total Clay Products and Other Structural Materials	\$	608,514	7,846,407	5,906,909
57	Grand Total	\$	2,724,003	2,397,433	29,236,137
			34,255,560	5,812,943	115,151,635
					249,797,671

1. Includes magnesium metal.

TABLE 2. Mineral Production, by Provinces, 1947 - Con.

Manitoba	Saskatchewan	Alberta	British Columbia	Northwest Territories	Yukon	Canada	No.
-	-	-	-	-	-	661,821	1
-	-	-	-	-	-	33,005,743	2
-	-	-	2,875	-	-	128,675	3
-	-	-	26,650	-	-	1,380,753	4
-	-	-	59	-	-	103	5
-	-	-	1,472	-	-	2,677	6
-	-	-	-	-	-	36,104	7
-	-	-	-	-	-	381,360	8
-	-	-	-	-	-	7,186	9
-	-	-	-	-	-	209,886	10
-	-	-	-	-	-	1	11
-	-	-	-	-	-	300	12
-	-	-	-	-	-	2,398	13
-	-	-	-	-	-	207,364	14
-	-	-	-	-	-	335	15
-	-	-	-	-	-	21,475	16
79,356	-	-	58,736	-	-	2,496,984	17
525,197	-	-	523,298	-	-	4,734,853	18
-	-	-	58	-	-	13,418	19
-	-	-	701	-	-	258,322	20
-	-	-	-	-	-	1,238,948	21
-	-	-	1,808,000	-	-	8,318,755	22
-	-	-	24,240	-	-	200,903	23
-	-	-	-	-	-	198,952	24
-	-	-	-	-	-	117,440	25
-	-	-	-	-	-	66,995	26
-	-	-	-	-	-	341,635	27
3,690,870	-	-	92,208,046	-	-	160,037,996	28
76,291	-	-	1,588,349	-	-	2,279,821	29
-	124,322	-	34,569	-	-	1,836,428	30
-	43,513	-	109,975	-	-	1,796,612	31
24,974	-	29,698	-	-	-	728,545	32
449,608	-	438,825	-	-	-	4,436,930	33
-	-	-	-	-	-	3,094	34
-	-	-	-	-	-	193,298	35
-	-	-	-	-	-	13,279	36
-	-	-	-	-	-	123,467	37
-	163,290	-	-	-	-	163,290	38
-	1,793,043	-	-	-	-	1,793,043	39
-	-	-	163	-	-	163	40
-	-	-	1,793	-	-	1,793	41
-	-	-	157,162	-	-	221,781	42
-	-	-	1,476,445	-	-	1,822,867	43
-	-	-	-	-	-	13,430	44
-	-	-	-	-	-	142,910	45
1,051,096	1,836,556	438,825	3,752,923	-	-	54,693,105	46
-	-	-	-	-	-	-	-
392,518	495,016	1,771,250	1,147,144	-	-	14,486,189	47
1,352,109	-	737,551	863,740	-	-	11,936,245	48
3,009,157	-	1,491,510	1,896,772	-	-	21,968,909	49
40,397	-	25,733	50,626	-	-	977,413	50
460,717	-	235,509	651,118	-	-	8,542,507	51
1,765,976	2,131,705	2,058,142	7,634,917	-	-	56,789,569	52
549,640	1,137,609	1,170,883	3,703,090	-	-	23,114,431	53
119,763	-	13,883	1,037,098	-	-	10,889,388	54
360,876	-	57,600	1,241,748	-	-	16,464,749	55
4,772,908	1,632,625	4,726,752	8,639,872	-	-	84,576,785	56
18,236,763	32,594,016	67,432,270	116,772,621	2,720,988	2,095,508	644,869,975	57

1. Includes magnesium metal.

TABLE 3. Mineral Production of Canada, 1948

No.		Nova Scotia	New Brunswick	Quebec	Ontario
METALS					
1	Antimony..... lb.	-	-	-	-
2	\$	-	-	-	-
3	Arsenic..... lb.	-	-	394,232	767,764
4	\$	-	-	27,246	55,663
5	Barium..... lb.	-	-	-	2,552
6	\$	-	-	-	7,988
7	Bismuth..... lb.	-	-	13,203	5,362
8	\$	-	-	26,406	10,724
9	Cadmium..... lb.	-	-	-	-
10	\$	-	-	-	-
11	Calcium..... lb.	-	-	-	895,203
12	\$	-	-	-	1,723,266
13	Chromite..... ton	-	-	1,715	-
14	\$	-	-	33,568	-
15	Cobalt..... lb.	-	-	-	1,544,852
16	\$	-	-	-	2,029,178
17	Copper..... lb.	-	-	97,626,279	240,765,806
18	\$	-	-	21,819,473	53,384,560
19	Gold..... oz.	188	-	770,625	2,095,377
20	\$	6,580	-	26,971,875	73,338,195
21	Iron ore..... ton	-	-	-	1,336,565
22	\$	-	-	-	7,482,860
23	Lead..... lb.	-	-	9,521,844	343,883
24	\$	-	-	1,717,741	62,036
25	Manganese ore..... ton	-	-	3	-
26	\$	-	-	88	-
27	Magnesium.....	Not available for publication			
28	Molybdenite..... lb.	-	-	304,762	-
29	\$	-	-	137,143	-
30	Nickel..... lb.	-	-	-	263,479,163
31	\$	-	-	-	86,904,235
32	Palladium, rhodium, etc..... oz.	-	-	-	148,343
33	\$	-	-	-	6,295,132
34	Platinum..... oz.	-	-	-	121,162
35	\$	-	-	-	10,601,675
36	Pitchblende.....	Not available for publication			
37	Selenium..... lb.	-	-	119,487	108,989
38	\$	-	-	238,974	217,978
39	Silver..... oz.	8	-	2,376,754	3,210,107
40	\$	6	-	1,782,566	2,407,580
41	Tellurium..... lb.	-	-	-	8,739
42	\$	-	-	-	15,293
43	Tin..... lb.	-	-	-	-
44	\$	-	-	-	-
45	Titanium ore..... ton	-	-	4,441	-
46	\$	-	-	21,091	-
47	Tungsten concentrates..... lb.	-	-	-	-
48	\$	-	-	-	-
49	Zinc..... lb.	-	-	95,758,039	-
50	\$	-	-	13,339,095	-
51	Total Metals..... \$	6,586	-	66,115,266	244,536,363
NON-METALLICS					
52	Asbestos..... ton	-	-	716,769	-
53	\$	-	-	42,231,475	-
54	Barite..... ton	94,068	-	-	47
55	\$	1,056,590	-	-	473
56	Diatomite..... ton	22	-	-	-
57	\$	670	-	-	-
58	Feldspar..... ton	-	-	42,800	12,051
59	\$	-	-	464,926	99,511
60	Fluorspar..... ton	-	-	-	11,340
61	\$	-	-	-	344,834

TABLE 3. Mineral Production, 1948

Manitoba	Saskatchewan	Alberta	British Columbia	Northwest Territories	Yukon	Canada	No
-	-	-	310,062	-	-	310,062	1
-	-	-	113,173	-	-	113,173	2
-	-	-	-	-	-	1,161,996	3
-	-	-	-	-	-	82,909	4
-	-	-	-	-	-	2,552	5
-	-	-	-	-	-	7,988	6
-	-	-	221,677	-	-	240,242	7
-	-	-	443,354	-	-	480,484	8
67,926	80,938	-	617,226	-	-	766,090	9
123,965	147,712	-	1,126,437	-	-	1,398,114	10
-	-	-	-	-	-	895,203	11
-	-	-	-	-	-	1,723,266	12
-	-	-	-	-	-	1,715	13
-	-	-	-	-	-	33,568	14
-	-	-	-	-	-	1,544,852	15
-	-	-	-	-	-	2,029,178	16
37,920,181	62,148,713	-	43,002,987	-	-	481,463,966	17
8,475,160	13,890,237	-	9,590,326	-	-	107,159,756	18
106,176	87,927	78	306,998	101,625	60,614	3,529,608	19
3,716,160	3,077,445	2,730	10,744,930	3,556,875	2,121,490	123,536,280	20
-	-	-	679	-	-	1,337,244	21
-	-	-	4,751	-	-	7,487,611	22
-	-	-	320,037,525	-	4,598,665	334,501,917	23
-	-	-	57,734,770	-	829,599	60,344,146	24
-	-	-	-	-	-	3	25
-	-	-	-	-	-	88	26
-	-	-	-	-	-	-	27
-	-	-	-	-	-	304,762	28
-	-	-	-	-	-	137,143	29
-	-	-	-	-	-	263,479,163	30
-	-	-	-	-	-	86,904,235	31
-	-	-	-	-	-	148,343	32
-	-	-	-	-	-	6,295,132	33
-	-	-	242	-	-	121,404	34
-	-	-	21,175	-	-	10,622,850	35
-	-	-	-	-	-	-	36
34,936	127,482	-	-	-	-	390,894	37
69,672	254,964	-	-	-	-	781,788	38
737,298	1,323,900	7	6,717,908	25,382	1,718,618	16,109,982	39
552,974	992,925	5	5,038,431	19,036	1,288,964	12,082,487	40
578	2,108	-	-	-	-	11,425	41
1,012	3,689	-	-	-	-	19,994	42
-	-	-	691,332	-	-	691,332	43
-	-	-	688,567	-	-	688,567	44
-	-	-	-	-	-	4,441	45
-	-	-	-	-	-	21,091	46
-	-	-	1,046,160	-	-	1,046,160	47
-	-	-	1,046,160	-	-	1,046,160	48
41,315,045	60,943,757	-	270,310,195	-	-	468,327,036	49
5,755,186	8,489,465	-	37,654,210	-	-	65,237,956	50
18,694,329	26,856,437	2,735	124,206,284	3,575,911	4,240,053	488,233,964	51
-	-	-	-	-	-	716,769	52
-	-	-	-	-	-	42,231,475	53
-	-	-	1,632	-	-	95,747	54
-	-	-	16,317	-	-	1,073,380	55
-	-	-	24	-	-	46	56
-	-	-	817	-	-	1,487	57
-	-	-	-	-	-	54,851	58
-	-	-	-	-	-	564,437	59
-	-	-	-	-	-	11,340	60
-	-	-	-	-	-	344,834	61

TABLE 3. Mineral Production, 1948 - Con.

No.			Nova Scotia	New Brunswick	Quebec	Ontario
Non-METALLICS - Conc.						
1	Garnet rock.....	ton	-	-	-	2
2		\$	-	-	-	200
3	Graphite.....	ton	-	-	-	2,539
4		\$	-	-	-	239,931
5	Grindstone.....	ton	-	220	-	-
6		\$	-	20,100	-	-
7	Gypsum.....	ton	2,795,848	61,534	-	182,303
8		\$	3,028,646	338,405	-	770,004
9	Iron oxides.....	ton	-	-	12,095	-
10		\$	-	-	193,619	-
11	Magnesite-brucite.....	ton	Not available for publication			
12		\$	-	-	1,724,489	-
13	Mica.....	lb.	-	-	4,275,195	3,125,308
14		\$	-	-	173,744	37,674
15	Mineral water.....	gal.	-	-	190,139	2,400
16		\$	-	-	109,789	470
17	Nepheline syenite.....	ton	-	-	-	74,386
18		\$	-	-	-	506,462
19	Peat moss.....	ton	-	4,482	24,622	7,261
20		\$	-	136,001	434,125	189,447
21	Quartz.....	ton	7,651	-	331,055	1,496,652
22		\$	52,863	-	767,118	1,019,997
23	Salt.....	ton	61,799	-	-	619,598
24		\$	700,164	-	-	3,265,654
25	Silica brick.....	M	2,198	-	-	1,266
26		\$	280,397	-	-	133,424
27	Soapstone and talc.....	ton	-	-	14,479	14,301
28		\$	-	-	145,361	164,462
29	Sodium sulphate.....	ton	-	-	-	-
30		\$	-	-	-	-
31	Sulphur.....	ton	-	-	69,463	15,550
32		\$	-	-	263,330	155,500
33	Total Non-metallics.....	\$	5,099,330	494,506	46,507,976	6,928,043
FUELS						
34	Coal.....	ton	6,430,991	522,136	-	-
35		\$	47,874,509	3,734,635	-	-
36	Natural gas.....	M cu.ft.	-	420,352	-	8,590,429
37		\$	-	287,446	-	6,958,247
38	Peat.....	ton	-	-	-	85
39		\$	-	-	-	850
40	Petroleum, crude.....	bbl.	-	21,372	-	176,989
41		\$	-	29,920	-	608,109
42	Total Fuels.....	\$	47,874,509	4,052,001	-	7,567,206
STRUCTURAL MATERIALS AND CLAY PRODUCTS						
43	Clay products.....	\$	1,031,685	434,772	5,123,908	6,563,754
44	Cement.....	bbl.	-	-	6,517,031	3,660,756
45		\$	-	-	12,306,243	7,076,317
46	Lime.....	ton	-	22,884	393,593	508,130
47		\$	-	353,621	3,707,633	4,761,521
48	Sand and gravel.....	ton	1,636,808	3,347,817	28,102,377	20,588,496
49		\$	1,706,838	1,231,256	9,535,944	10,468,216
50	Stone.....	ton	239,658	138,478	4,880,759	5,017,940
51		\$	681,297	437,129	8,741,897	6,338,253
52	Total Structural Materials and Clay Products.....	\$	3,419,820	2,456,778	39,415,625	35,208,061
53	GRAND TOTAL 1948.....	\$	56,400,245	7,003,285	152,038,867	294,239,673
54	GRAND TOTAL 1947.....	\$	34,255,560	5,812,943	115,151,635	249,797,671

TABLE 3. Mineral Production, 1948 - Con.

Manitoba	Saskatchewan	Alberta	British Columbia	Northwest Territories	Yukon	Canada	No.
-	-	-	-	-	-	2	1
-	-	-	-	-	-	200	2
-	-	-	-	-	-	2,539	3
-	-	-	-	-	-	239,931	4
-	-	-	-	-	-	220	5
-	-	-	-	-	-	20,100	6
94,698	-	-	82,426	-	-	3,216,809	7
836,483	-	-	574,707	-	-	5,548,245	8
-	-	-	1,086	-	-	13,181	9
-	-	-	9,772	-	-	203,391	10
-	-	-	-	-	-	-	11
-	-	-	-	-	-	1,724,489	12
-	-	-	501,800	-	-	7,902,303	13
-	-	-	8,530	-	-	219,948	14
-	-	-	-	-	-	192,539	15
-	-	-	-	-	-	110,259	16
-	-	-	-	-	-	74,386	17
-	-	-	-	-	-	506,462	18
1,939	-	-	51,496	-	-	89,800	19
79,654	-	-	1,928,651	-	-	2,767,878	20
-	151,676	-	30,228	-	-	2,017,262	21
-	53,086	-	189,509	-	-	2,082,573	22
25,251	-	34,613	-	-	-	741,261	23
420,430	-	449,780	-	-	-	4,836,028	24
-	-	-	-	-	-	3,464	25
-	-	-	-	-	-	393,821	26
-	-	-	-	-	-	28,780	27
-	-	-	-	-	-	309,823	28
-	153,698	-	-	-	-	153,698	29
-	2,136,276	-	-	-	-	2,136,276	30
-	-	-	144,450	-	-	229,463	31
-	-	-	1,417,528	-	-	1,836,358	32
1,336,567	2,189,362	449,780	4,145,831	-	-	67,151,395	33
-	-	-	-	-	-	-	34
-	1,589,172	8,123,255	1,780,334	-	3,801	18,449,689	34
-	3,020,305	42,217,449	9,811,253	-	25,857	106,584,008	35
-	477,271	48,965,217	-	150,000	-	58,603,269	36
-	47,727	8,324,087	-	15,000	-	15,632,507	37
-	-	-	-	-	-	85	38
-	-	-	-	-	-	850	39
-	849,166	10,888,592	-	350,541	-	12,286,660	40
-	976,541	35,127,751	-	676,574	-	37,418,895	41
-	4,044,573	85,669,287	9,811,253	691,574	25,857	159,736,260	42
-	-	-	-	-	-	-	43
517,181	509,593	2,055,738	1,392,417	-	-	17,629,048	43
1,697,042	-	1,224,313	1,027,981	-	-	14,127,123	44
3,919,145	-	2,521,978	2,441,304	-	-	28,264,987	45
46,933	-	24,371	57,673	-	-	1,053,584	46
577,652	-	234,770	1,019,865	-	-	10,655,062	47
2,498,277	1,846,336	3,592,275	7,058,477	-	-	68,670,863	48
754,196	917,243	2,219,497	3,796,406	-	-	30,629,596	49
147,839	-	14,298	1,257,671	-	-	11,696,643	50
282,279	-	57,444	1,410,254	-	-	17,948,553	51
6,050,453	1,426,836	7,089,427	10,060,246	-	-	105,127,246	52
26,081,349	34,517,208	93,211,229	148,223,614	4,267,485	4,265,910	820,248,865	53
18,236,763	32,594,016	67,432,270	116,772,621	2,720,988	2,095,508	644,869,975	54

TABLE 4. Production of Leading Minerals, by Months 1947 and 1948

1947	Asbestos	Cement	Clay Products	Coal	Copper
	tons	barrels	\$	tons	lb.
January.....	44,058	403,300	894,908	1,700,463	28,720,875
February.....	42,207	421,647	907,544	1,136,012	30,077,973
March.....	57,157	809,841	1,043,577	976,932	42,647,385
April.....	60,517	1,060,391	1,036,454	850,887	39,710,619
May.....	60,036	1,291,869	1,273,339	859,587	41,133,146
June.....	50,102	1,276,799	1,251,331	1,125,217	38,561,282
July.....	53,434	1,249,686	1,390,210	1,204,971	39,216,433
August.....	53,361	1,173,570	1,298,070	1,216,841	35,855,487
September.....	58,356	1,235,905	1,382,079	1,546,111	34,955,728
October.....	59,461	1,309,748	1,465,894	1,734,598	45,059,049
November.....	65,754	1,071,626	1,350,206	1,748,672	37,861,177
December.....	57,378	631,863	1,192,557	1,768,575	37,923,939
Total.....	661,821	11,936,245	14,486,189	15,868,866	451,723,093

	Iron Ore	Gold	Gypsum	Lead	Lime
	tons	fine oz.	tons	lb.	tons
January.....	—	234,194	92,020	25,566,439	75,256
February.....	—	223,071	78,887	25,686,854	68,561
March.....	14,370	263,933	102,089	29,324,552	77,763
April.....	97,104	254,951	86,491	26,275,567	82,854
May.....	210,911	268,975	154,877	26,094,389	85,201
June.....	275,923	269,163	265,429	29,167,426	80,587
July.....	292,217	261,461	321,286	28,565,302	81,854
August.....	336,475	260,954	327,882	27,671,759	81,806
September.....	285,424	247,703	400,212	26,959,156	79,959
October.....	300,228	258,828	261,109	25,994,963	89,206
November.....	76,996	252,235	237,634	29,784,245	87,566
December.....	29,718	274,753	169,068	22,246,035	86,800
Total.....	1,919,366	3,070,221	2,496,984	323,336,687	977,413

	Natural Gas	Nickel	Petroleum	Salt	Silver	Zinc
	M cu. ft.	lb.	barrels	tons	fine oz.	lb.
January.....	5,717,089	19,531,289	594,727	60,456	833,473	34,060,000
February.....	5,672,319	17,217,905	531,966	56,947	973,183	31,113,027
March.....	5,237,009	20,114,908	599,222	58,040	1,137,858	32,956,716
April.....	4,140,818	20,129,488	599,263	62,867	924,469	35,302,093
May.....	3,814,674	19,855,079	632,330	64,346	1,010,138	34,915,058
June.....	3,231,023	19,754,029	612,001	64,525	1,178,225	34,789,814
July.....	3,018,217	19,663,104	628,257	65,316	1,116,915	35,024,285
August.....	3,158,566	19,921,655	642,516	62,689	1,153,447	32,462,208
September.....	3,470,736	15,219,409	649,881	56,223	1,003,552	34,799,920
October.....	4,071,105	23,071,982	712,531	61,286	1,136,959	36,157,981
November.....	5,260,958	19,827,464	727,138	63,378	1,035,684	36,400,176
December.....	5,864,053	22,945,184	762,660	52,472	1,000,115	37,744,548
Total.....	52,656,567	237,251,496	7,692,492	728,545	12,504,018	415,725,826

TABLE 4. Production of Leading Minerals, by Months 1947-1948 — Concluded

1948	Asbestos	Cement	Clay Products	Coal	Copper
	tons	tons	\$	tons	lb.
January.....	46,633	500,317	1,004,675	1,396,363	40,690,078
February.....	50,127	647,179	971,476	1,155,109	38,033,072
March.....	62,524	1,072,489	1,174,636	1,658,699	41,947,254
April.....	61,590	1,268,018	1,307,584	1,605,266	41,620,430
May.....	60,681	1,413,959	1,415,034	1,362,393	41,280,584
June.....	53,975	1,455,273	1,658,445	1,404,189	40,793,623
July.....	56,481	1,420,151	1,661,710	1,361,736	38,824,142
August.....	64,185	1,434,896	1,594,360	1,383,728	36,254,784
September.....	68,424	1,481,347	1,773,388	1,578,467	39,177,650
October.....	66,264	1,377,554	1,777,628	1,811,537	40,712,831
November.....	67,426	1,311,432	1,784,786	1,892,580	40,467,115
December.....	58,459	744,508	1,505,326	1,839,622	41,662,403
Total.....	716,769	14,127,123	17,629,048	18,449,689	481,463,966

	Iron Ore	Gold	Gypsum	Lead	Lime
	tons	fine oz.	tons	lb.	tons
January.....	—	273,415	141,562	22,534,626	77,645
February.....	—	261,650	40,915	26,400,131	76,274
March.....	—	287,760	82,875	25,403,629	89,520
April.....	57,884	286,124	226,976	26,153,546	89,690
May.....	162,218	288,474	275,161	25,949,422	88,505
June.....	184,024	290,102	356,490	22,633,503	85,478
July.....	93,302	296,247	476,320	29,139,603	84,727
August.....	155,335	305,452	387,120	33,807,642	86,184
September.....	234,236	294,963	347,081	30,677,253	88,851
October.....	298,760	306,989	415,110	32,097,545	98,455
November.....	150,806	311,399	292,209	32,061,284	97,057
December.....	679	327,033	174,990	27,643,733	91,198
Total.....	1,337,244	3,529,608	3,216,809	334,501,917	1,053,584

	Natural Gas	Nickel	Petroleum	Salt	Silver	Zinc
	M cu. ft.	lb.	barrels	tons	fine oz.	lb.
January.....	6,081,198	21,658,146	777,639	53,282	1,059,502	33,956,681
February.....	6,505,333	19,464,157	779,893	53,434	1,145,020	34,669,617
March.....	6,064,042	21,026,576	816,504	53,792	1,215,564	36,787,838
April.....	5,089,540	26,523,329	796,927	57,166	1,204,934	38,660,164
May.....	3,912,649	22,820,237	917,429	61,090	1,186,090	40,515,254
June.....	3,309,743	20,867,468	1,038,563	63,844	1,320,440	37,656,531
July.....	3,326,215	20,898,980	1,179,613	67,898	1,970,853	43,091,531
August.....	3,404,976	18,097,902	1,244,602	65,371	1,678,115	41,019,818
September.....	3,652,010	19,781,364	1,100,778	63,968	1,360,157	39,530,888
October.....	4,657,448	20,644,134	1,206,738	68,817	1,527,350	44,187,999
November.....	5,491,314	25,510,182	1,264,533	69,577	1,235,792	41,915,918
December.....	7,108,801	26,186,688	1,247,654	63,022	1,206,165	36,334,797
Total.....	58,603,269	263,479,163	12,370,873	741,261	16,109,982	468,327,036

TABLE 5. Annual Values of the Mineral Production since 1886

Year	Metallics	Fuels	Other non-metallics	Structural materials and clay products	Total	Value per capita
1886.....	2,118,608	4,367,444	1,259,827	2,225,376	10,221,255	2.23
1887.....	2,073,746	5,080,853	1,209,153	2,707,579	11,321,331	2.23
1888.....	2,628,292	5,522,016	1,320,585	2,798,001	12,518,894	2.67
1889.....	3,251,299	5,702,930	1,562,010	3,247,674	14,013,913	2.96
1890.....	3,614,488	6,745,279	2,392,315	3,761,271	16,763,353	3.50
1891.....	5,421,659	8,205,228	2,025,195	3,074,534	18,976,616	3.92
1892.....	3,698,697	7,658,444	1,417,821	3,603,455	16,628,417	3.39
1893.....	4,630,495	8,771,358	1,249,283	5,133,946	20,035,082	4.04
1894.....	4,685,852	8,727,095	1,263,803	5,004,408	19,931,158	3.98
1895.....	6,087,114	8,248,923	1,193,512	4,726,368	20,505,917	4.05
1896.....	8,030,633	8,658,410	1,207,671	4,327,542	22,474,256	4.38
1897.....	13,780,314	8,641,016	1,425,093	4,388,550	28,485,023	5.49
1898.....	21,741,865	9,608,158	1,492,262	5,270,146	38,412,431	7.32
1899.....	29,282,823	11,872,788	1,610,111	6,168,283	49,234,005	9.27
1900.....	40,521,807	15,311,479	1,914,690	6,372,901	64,420,877	12.04
1901.....	41,939,500	14,047,654	2,713,621	6,803,836	65,804,611	12.16
1902.....	35,924,651	16,359,722	2,730,425	7,896,836	63,211,634	11.36
1903.....	33,210,147	17,197,317	2,589,302	8,443,747	61,740,513	10.83
1904.....	30,924,897	17,858,902	2,807,995	8,182,103	60,073,897	10.27
1905.....	36,946,212	18,756,112	3,468,408	9,608,267	69,078,999	11.49
1906.....	41,949,563	21,081,724	4,424,882	11,530,528	79,286,697	12.81
1907.....	42,426,607	26,254,162	5,021,384	12,863,049	86,885,023	13.75
1908.....	41,774,362	26,954,515	5,188,269	11,339,955	85,557,101	13.16
1909.....	44,156,841	26,548,109	4,593,142	16,533,349	91,831,441	13.70
1910.....	49,438,873	32,647,404	5,109,754	19,627,592	106,823,623	14.93
1911.....	46,105,423	28,746,214	5,659,746	22,709,611	103,220,994	14.32
1912.....	61,172,753	38,729,694	6,750,980	28,794,869	135,048,296	18.33
1913.....	66,361,351	41,060,860	7,402,849	30,809,752	145,634,812	19.35
1914.....	59,386,619	37,302,122	6,165,107	26,009,227	128,863,075	16.75
1915.....	75,814,841	36,118,839	7,254,732	17,920,759	137,109,171	17.44
1916.....	106,319,365	43,169,294	10,245,689	17,467,185	177,201,534	22.05
1917.....	106,455,147	48,787,368	14,566,995	19,837,311	189,646,821	23.18
1918.....	114,549,152	60,428,979	17,192,967	19,130,799	211,301,897	25.37
1919.....	73,262,793	59,325,710	16,676,377	27,421,510	176,686,390	20.84
1920.....	77,939,630	85,767,250	22,260,697	41,892,088	227,859,665	26.40
1921.....	49,343,232	77,694,017	10,148,665	34,737,428	171,923,342	19.56
1922.....	61,785,707	71,990,674	10,986,120	39,534,741	184,297,242	20.55
1923.....	84,391,218	78,465,622	13,471,110	37,751,381	214,079,331	23.41
1924.....	102,406,528	59,770,024	12,025,985	35,380,869	209,583,406	22.71
1925.....	117,082,298	57,354,055	14,497,746	37,649,234	226,583,333	24.19
1926.....	115,237,581	68,743,933	16,496,211	39,959,398	240,437,123	25.61
1927.....	131,561,030	71,426,516	17,559,730	44,809,419	247,356,695	25.67
1928.....	132,012,454	74,413,160	18,826,692	49,737,181	274,989,487	27.96
1929.....	154,454,056	76,787,397	21,073,959	58,534,834	310,850,246	31.00
1930.....	142,743,764	68,184,485	15,217,864	53,727,465	279,873,578	27.42
1931.....	120,930,147	54,453,143	10,893,141	44,158,295	230,434,726	22.21
1932.....	112,041,763	49,047,342	7,740,837	22,398,283	191,228,225	18.20
1933.....	147,015,593	47,778,436	10,004,537	16,696,687	221,495,253	20.74
1934.....	194,110,968	54,262,099	10,501,762	19,286,761	278,161,590	25.67
1935.....	221,800,849	54,824,200	12,504,008	23,215,400	312,344,457	28.56
1936.....	259,425,194	59,983,320	16,740,117	25,770,741	361,919,372	32.82
1937.....	334,165,243	65,828,879	22,495,271	34,869,699	457,359,092	41.13
1938.....	323,075,154	64,803,294	20,066,123	33,878,666	441,823,237	39.42
1939.....	343,506,123	70,671,328	25,061,849	35,362,759	474,602,059	41.94
1940.....	382,503,012	78,837,874	26,011,498	42,472,651	529,825,035	46.39
1941.....	395,346,581	85,141,997	34,379,440	45,373,272	560,241,290	49.06
1942.....	392,192,452	92,169,291	36,677,122	45,729,807	566,768,672	48.63
1943.....	356,812,760	92,514,384	38,716,568	42,010,254	530,053,966	44.87
1944.....	308,292,161	97,291,007	37,251,009	42,984,937	485,819,114	40.57
1945.....	317,093,719	93,531,276	39,710,513	48,419,673	498,755,181	41.15
1946.....	290,424,689	102,516,888	43,754,453	66,120,221	502,816,251	40.86
1947.....	385,118,878	110,481,207	54,693,105	84,576,785	644,869,975	51.25
1948.....	486,233,964	159,736,260	67,151,395	105,127,246	820,248,865	63.67
Total 1886-1948.....					13,235,529,044	

Note: 1886-1897 total includes \$250,000 estimated value of unreported products. 1898-1908 total includes \$300,000 estimated value of unreported products, mostly structural materials.

In presenting a total valuation of the mineral production as is here given, it should be explained that the production of the metals, copper, gold, lead, nickel, silver, zinc, etc., is given as far as possible on the basis of the quantities of metals recovered in smelters, and the total quantities in each case are valued chiefly at the average market price of the refined metal in a recognized market. There are thus included in some cases the values that have accrued in the smelting or refining of metals outside of Canada.

TABLE 6. Values of the Entire Mineral Production, by Provinces, since 1934

Year	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba
	\$	\$	\$	\$	\$
1934.....	23,310,729	2,156,151	31,269,945	145,565,871	9,776,934
1935.....	23,183,128	2,821,027	39,124,696	158,934,269	12,052,417
1936.....	26,672,278	2,587,791	49,736,919	184,532,892	11,315,527
1937.....	30,314,138	2,765,643	65,160,215	230,042,517	15,751,645
1938.....	26,253,645	3,802,565	68,965,594	219,801,994	17,173,002
1939.....	30,746,200	3,949,433	77,335,998	232,519,948	17,137,930
1940.....	33,318,587	3,435,916	86,313,491	261,483,349	17,828,522
1941.....	32,569,867	3,690,375	99,651,044	267,435,727	16,689,867
1942.....	32,783,165	3,690,158	104,300,010	259,114,946	14,345,046
1943.....	29,979,837	3,676,834	101,610,678	232,948,959	13,412,266
1944.....	33,981,977	4,133,902	90,182,553	210,706,307	13,830,406
1945.....	32,220,659	4,182,100	91,518,120	216,541,856	14,429,423
1946.....	35,350,271	4,813,166	92,785,148	191,544,429	16,403,549
1947.....	34,255,560	5,812,943	115,151,635	249,797,671	18,236,763
1948.....	56,400,245	7,003,285	152,038,867	294,239,673	26,081,349
	Saskatchewan	Alberta	British Columbia	Yukon	Northwest Territories ¹
	\$	\$	\$	\$	\$
1934.....	2,977,061	20,228,851	41,206,965	1,628,879	139,604
1935.....	3,816,943	22,289,681	46,692,050	1,302,308	541,638
1936.....	6,970,397	23,305,726	54,407,036	2,220,372	775,834
1937.....	10,271,463	25,597,117	73,555,798	3,784,528	994,518
1938.....	7,782,847	28,966,272	64,549,130	3,959,570	1,614,076
1939.....	8,794,090	30,691,617	65,216,745	4,961,321	3,248,777
1940.....	11,505,858	35,092,337	74,134,485	4,118,333	2,594,157
1941.....	15,020,555	41,364,385	76,841,180	3,117,992	3,860,298
1942.....	20,578,749	47,359,831	77,247,932	3,453,568	3,976,267
1943.....	26,735,984	48,941,210	68,442,386	1,625,819	2,679,993
1944.....	22,291,848	51,066,662	57,246,071	939,319	1,440,069
1945.....	22,336,074	51,753,237	64,063,842	1,239,058	470,812
1946.....	24,480,900	60,082,513	74,622,846	1,693,904	1,039,325
1947.....	32,594,016	67,432,270	148,772,621	2,095,508	2,739,938
1948.....	34,517,208	93,211,229	148,223,614	4,265,910	4,267,485

1. Values of pitchblende products not included since 1941.

TABLE 7. Mineral Production of Nova Scotia, 1946-1948

Product	1946		1947		1948	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS:						
Gold..... fine oz.	4,321	158,797	1,271	44,485	188	6,580
Silver..... fine oz.	146	122	97	70	8	6
NON-METALLICS:						
Barite..... tons	117,691	987,473	125,760	1,353,705	94,068	1,056,590
Coal..... tons	5,452,898	30,253,654	4,118,196	27,175,251	6,430,991	47,874,509
Diatomite..... tons	49	1,505	44	1,205	22	670
Gypsum..... tons	1,538,738	1,812,815	2,137,704	2,303,275	2,795,848	3,028,646
Quartz..... tons	7,525	15,550	9,146	55,393	7,651	52,663
Salt..... tons	38,371	329,579	40,107	416,332	61,799	700,164
Silica brick..... M	2,055	119,272	1,983	181,841	2,198	260,397
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS:						
Clay products.....	-	671,466	-	752,126	-	1,031,685
Lime:						
Quicklime..... tons	-	-	-	-	-	-
Hydrated lime..... tons	1,105,980	484,585	2,966,680	1,363,363	1,636,808	1,706,838
Sand and gravel..... tons	183,733	515,453	379,622	608,514	239,658	681,297
Stone..... tons	-	-	-	-	-	-
Total.....	-	35,350,271	-	34,255,560	-	56,400,245

TABLE 8. Mineral Production of New Brunswick, 1946-1948

Product		1946		1947		1948	
		Quantity	Value	Quantity	Value	Quantity	Value
			\$		\$		\$
METALLICS:							
Iron ore.....	tons	—	—	—	—	—	—
Manganese ore.....	tons	—	—	225	7,875	—	—
NON-METALLICS:							
Coal.....	tons	366,735	2,069,992	345,194	2,301,511	522,136	3,734,635
Grindstones.....	tons	295	17,450	335	21,475	220	20,100
Gypsum.....	tons	38,839	550,972	65,939	711,535	61,534	338,405
Natural gas.....	M cu.ft.	541,010	262,441	489,810	279,790	420,352	287,446
Petroleum.....	bbl.	28,584	40,018	23,129	32,381	21,372	29,920
Peat Moss.....	tons	2,247	54,892	2,527	60,943	4,482	136,001
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS:							
Clay products.....	—	—	336,971	—	381,184	—	434,772
Lime:							
Quicklime.....	tons	18,569	242,943	17,928	253,799	19,209	301,541
Hydrated lime.....	tons	3,346	43,458	3,010	41,379	3,675	52,080
Sand and gravel.....	tons	2,203,646	807,045	3,464,347	1,278,376	3,347,817	1,231,256
Stone.....	tons	121,123	386,984	227,419	442,695	138,478	437,129
Total.....	—	—	4,813,166	—	5,812,943	—	7,003,283

TABLE 9. Mineral Production of Quebec¹, 1946-1948

Product		1946		1947		1948	
		Quantity	Value	Quantity	Value	Quantity	Value
			\$		\$		\$
METALLICS:							
Arsenic (As ₂ O ₃).....	lb.	420,654	21,580	787,736	49,348	394,232	27,246
Bismuth.....	lb.	6,484	9,078	15	30	13,203	26,406
Chromite.....	tons	3,110	61,123	2,162	42,159	1,715	33,568
Copper.....	lb.	69,797,697	8,934,103	85,121,428	17,356,259	97,626,279	21,819,473
Gold.....	fine oz.	618,339	22,723,958	598,127	20,934,445	770,625	26,971,875
Lead.....	lb.	7,359,708	496,780	8,175,577	1,117,601	9,521,844	1,717,741
Magnesium.....	lb.	—	—	Not available for publication		3	88
Manganese ore.....	lb.	—	—	759,795	309,048	304,762	137,143
Molybdenite concentrates.....	lb.	736,400	295,640	181,573	339,542	119,487	238,974
Selenium.....	lb.	110,768	201,598	2,134,189	1,536,616	2,376,754	1,782,566
Silver.....	fine oz.	1,916,453	1,603,113	—	—	—	—
Tellurium.....	lb.	—	—	—	—	—	—
Titanium ore.....	tons	1,406	7,735	7,104	36,036	4,441	21,091
Zinc.....	lb.	89,650,129	7,001,675	69,462,925	7,800,686	95,758,039	13,339,095
NON-METALLICS:							
Asbestos.....	tons	558,181	25,240,283	661,821	33,005,748	716,769	42,231,475
Feldspar.....	tons	29,758	330,981	29,146	320,964	42,800	464,926
Iron oxides (ochre).....	tons	12,268	146,401	13,360	257,621	12,095	193,619
Magnetite dolomite and truscite	—	—	1,225,593	—	1,238,948 ²	—	1,724,489 ²
Mica.....	tons	1,199	108,667	1,636	120,712	2,138	173,744
Natural mineral waters.....	Imp. gal.	211,842	121,526	195,452	116,840	190,139	109,789
Peat moss.....	tons	26,362	501,073	21,292	363,795	24,622	434,125
Phosphate.....	tons	87	869	—	—	—	—
Quartz.....	tons	214,076	612,128	226,050	638,521	331,055	767,118
Soapstone and talc.....	tons	14,914	150,004	13,279	123,467	14,479	145,361
Sulphur.....	tons	92,716	375,328	48,688	187,112	69,463	263,330
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS:							
Cement.....	bbl.	5,046,166	7,910,548	5,453,407	9,351,477	6,517,031	12,306,243
Clay products.....	—	—	3,457,168	—	4,257,423	—	5,123,908
Lime:							
Quicklime.....	tons	209,573	1,874,251	247,359	2,356,969	283,539	3,097,972
Hydrated lime.....	tons	86,920	430,575	101,679	546,522	110,054	609,661
Sand and gravel.....	tons	12,374,125	3,313,103	16,537,303	4,877,339	28,102,377	9,535,944
Stone.....	tons	3,486,259	5,630,265	4,266,956	7,846,407	4,880,759	8,741,897
Total.....	—	—	92,785,148	—	115,151,635	—	152,038,867

1. There is also in this province an important production of aluminum from imported ores.

2. Includes magnesium metal.

TABLE 10. Mineral Production of Ontario, 1946-1948

Product	1946		1947		1948	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS:						
Arsenic (As ₂ O ₃)..... lb.	325,231	16,664	-	-	767,764	55,663
Barium..... lb.	-	-	568	1,278	2,552	7,988
Bismuth..... lb.	-	-	-	-	5,362	10,724
Calcium..... lb.	53,548	68,720	602,665	642,607	895,203	1,723,266
Cobalt ¹ lb.	73,900	70,215	572,673	875,644	1,544,852	2,029,178
Copper..... lb.	179,424,639	22,502,528	227,867,613	46,018,544	240,765,806	53,384,560
Gold..... fine oz.	1,813,333	66,639,988	1,944,819	68,068,665	2,095,377	73,338,195
Iron ore..... short tons	1,549,523	6,822,947	1,919,366	9,313,201	1,336,565	7,482,860
Lead..... lb.	699,244	47,199	282,765	38,654	343,883	62,036
Magnesium..... lb.	320,677	75,538	-	-	-	-
Nickel..... lb.	192,124,537	45,385,155	237,251,496	70,650,764	263,479,163	86,904,235
Palladium, rhodium, etc..... fine oz.	117,566	5,162,801	110,332	4,387,740	148,343	6,295,132
Platinum..... fine oz.	121,771	7,672,791	94,570	5,582,467	121,162	10,601,675
Selenium..... lb.	270,606	492,503	146,406	273,779	108,989	217,978
Silver..... fine oz.	2,485,215	2,078,882	2,342,032	1,686,263	3,210,107	2,407,580
Tellurium..... lb.	14,200	21,868	6,169	10,796	8,739	15,293
Zinc..... lb.	42,628	3,329	-	-	-	-
NON-METALLICS:						
Asbestos..... tons	-	279	-	-	-	-
Barite..... tons	-	-	40	398	47	473
Corundum..... tons	742	102,340	-	-	-	-
Feldspar..... tons	5,485	53,696	6,958	60,396	12,051	99,511
Fluorspar..... tons	8,042	237,491	7,186	209,886	11,340	344,834
Garnet (schist)..... tons	2	1,200	1	300	2	200
Graphite..... tons	1,975	180,405	2,398	207,364	2,539	239,931
Gypsum..... tons	122,524	492,179	155,249	671,548	182,303	770,004
Mica..... tons	2,353	66,952	1,619	55,951	1,563	37,674
Natural mineral waters..... imp.gal.	6,000	878	3,500	600	2,400	470
Natural gas..... M cu.ft.	7,051,309	4,656,528	7,785,921	5,334,991	8,590,429	6,958,247
Nepheline syenite..... tons	61,261	229,198	66,995	341,635	74,386	506,462
Peat (fuel)..... tons	145	1,305	95	950	85	850
Peat (moss)..... tons	17,176	228,496	8,250	170,443	7,261	189,447
Petroleum..... bbl.	123,082	291,719	131,295	350,000	176,989	608,109
Quartz ² tons	1,052,644	852,713	1,442,341	949,210	1,496,652	1,019,997
Salt..... tons	441,679	2,408,279	633,766	3,132,165	619,598	3,265,654
Silica brick..... M	847	78,532	1,111	12,157	1,266	133,424
Sulphur ³ tons	15,433	154,330	15,931	159,310	15,550	155,500
Talc..... tons	14,439	153,680	13,430	142,910	14,301	164,462
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS:						
Cement..... bbl.	3,677,695	6,025,503	3,529,438	6,219,993	3,660,756	7,076,317
Clay Products.....	-	4,288,780	-	5,289,528	-	6,563,754
Lime:						
Quicklime..... tons	362,898	2,712,150	436,374	3,306,151	436,634	3,797,774
Hydrated lime..... tons	49,273	604,081	54,307	690,343	71,496	963,747
Sand and gravel..... tons	14,881,918	6,738,595	20,230,499	9,034,131	20,588,496	10,468,216
Stone..... tons	3,890,277	3,923,972	4,844,647	5,906,909	5,017,940	6,338,253
Total.....	-	191,544,429	-	249,797,671	-	294,239,673

1. Exclusive of metal in ore placed on Government stock pile at Deloro, Ontario, but includes any metal reshipped from stock pile.
2. Includes low grade silica sand for fluxing purposes.
3. Sulphur content of pyrites shipped and estimated sulphur salvaged from smelter gases.

TABLE 11. Mineral Production of Manitoba, 1946-1948

Product	1946		1947		1948	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS:						
Cadmium..... lb.	63,410	77,360	75,030	129,052	67,926	123,965
Copper..... lb.	38,501,047	4,928,134	30,631,768	6,245,817	37,920,181	8,475,160
Gold..... fine oz.	79,402	2,918,024	72,906	2,551,710	106,176	3,716,160
Selenium..... lb.	46,118	83,935	33,653	62,931	34,936	69,872
Silver..... fine oz.	528,017	441,686	424,365	305,543	737,298	552,974
Tellurium..... lb.	349	537	588	1,049	578	1,012
Thallium..... lb.	-	-	-	-	-	-
Zinc..... lb.	35,580,537	2,778,840	27,753,131	3,116,677	41,315,045	5,755,186
NON-METALLICS:						
Gypsum..... tons	63,187	428,133	79,356	525,197	94,698	836,483
Peat moss..... tons	1,772	65,039	1,845	76,291	1,939	79,654
Salt..... tons	26,166	446,472	24,974	449,608	25,251	420,430
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS:						
Cement..... bbl.	1,254,946	2,811,264	1,352,109	3,009,157	1,697,042	3,919,145
Clay products..... -	-	372,920	-	392,518	-	517,181
Lime:						
Quicklime..... tons	27,178	242,506	30,090	295,592	36,338	398,264
Hydrated lime..... tons	10,182	149,798	10,307	165,125	10,595	179,388
Sand and gravel..... tons	1,333,890	416,431	1,765,976	549,640	2,498,277	754,196
Stone..... tons	65,132	242,470	119,763	360,876	147,839	282,279
Total..... -	-	16,403,549	-	18,236,763	-	26,081,349

TABLE 12. Mineral Production of Saskatchewan, 1946-1948

Product	1946		1947		1948	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS:						
Cadmium..... lb.	102,925	125,566	97,866	168,330	80,938	147,712
Copper..... lb.	62,712,954	8,027,258	66,301,926	13,518,963	62,148,713	13,890,237
Gold..... fine oz.	112,101	4,119,712	93,747	3,281,145	87,927	3,077,445
Selenium..... lb.	94,375	171,762	139,458	260,786	127,482	254,964
Silver..... fine oz.	1,498,496	1,253,492	1,282,546	923,433	1,323,900	992,925
Tellurium..... lb.	1,299	2,000	2,437	4,265	2,108	3,689
Zinc..... lb.	71,077,110	5,551,122	65,503,602	7,356,054	60,943,757	8,489,465
NON-METALLICS:						
Coal..... tons	1,523,786	2,544,926	1,571,147	2,928,812	1,589,172	3,020,305
Quartz ¹ tons	130,105	47,542	124,322	43,513	151,676	53,086
Salt..... tons	-	-	-	-	-	-
Sodium sulphate..... tons	105,919	1,117,683	163,290	1,793,043	153,698	2,136,276
Natural gas..... M cu. ft.	209,569	61,740	274,193	68,891	477,271	47,727
Petroleum crude..... bbl.	118,686	135,990	540,117	614,156	849,166	976,541
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS:						
Clay products..... -	-	411,446	-	495,016	-	509,593
Sand and gravel..... tons	1,732,731	910,661	2,131,705	1,137,609	1,846,336	917,243
Total..... -	-	24,480,900	-	32,594,016	-	34,517,208

¹ Low grade silica sand for fluxing purposes.

TABLE 13. Mineral Production of Alberta, 1946-1948

Product	1946		1947		1948	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS:						
Gold..... fine oz.	110	4,042	78	2,730	78	2,730
Silver..... fine oz.	12	10	16	12	7	5
NON-METALLICS:						
Bituminous sands..... tons	1	1	1	1	1	1
Coal..... tons	8,826,239	33,339,579	8,070,430	36,439,158	8,123,255	42,217,449
Natural gas..... M cu. ft.	40,097,096	7,184,006	44,106,643	7,745,886	48,965,217	8,324,087
Peat moss..... tons	—	—	—	—	—	—
Petroleum..... bbl.	7,137,921	14,347,933	6,770,477	18,078,907	10,888,592	35,127,751
Salt..... tons	31,769	441,835	29,698	438,825	34,613	449,780
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS:						
Cement..... bbl.	809,721	1,635,222	737,551	1,491,510	1,224,313	2,521,978
Clay products..... —	—	1,808,971	—	1,771,250	—	2,055,738
Lime:						
Quicklime..... tons	21,962	186,696	23,789	216,069	23,437	225,430
Hydrated lime..... tons	1,823	18,230	1,944	19,440	934	9,340
Sand and gravel..... tons	1,812,468	1,060,703	2,058,142	1,170,883	3,592,275	2,219,497
Stone..... tons	13,417	55,286	13,883	57,600	14,298	57,444
Total.....	—	60,082,513	—	67,432,270	—	93,211,229

1. Included with petroleum refining; no crude sands sold.

TABLE 14. Mineral Production of British Columbia, 1946-1948

Product	1946		1947		1948	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLICS:						
Antimony..... lb.	642,145	96,322	1,150,463	384,255	310,062	113,173
Arsenic (As ₂ O ₃)..... lb.	1	1	1	1	1	1
Bismuth..... lb.	234,020	327,628	284,357	560,183	221,677	443,354
Cadmium..... lb.	636,315	776,304	545,638	938,497	617,226	1,126,437
Copper..... lb.	17,500,538	2,240,068	41,800,358	8,402,305	43,002,987	9,590,326
Gold..... fine oz.	136,242	5,006,893	249,011	8,715,385	306,998	10,744,930
Iron ore..... tons	—	—	—	—	679	4,751
Lead..... lb.	345,862,680	23,345,731	313,733,089	42,887,313	320,037,525	57,734,770
Platinum..... fine oz.	—	—	—	—	242	21,175
Silver..... fine oz.	6,078,419	5,084,597	5,903,367	4,250,424	6,717,908	5,038,431
Tin..... lb.	874,186	507,028	714,198	517,794	691,332	688,567
Tungsten concentrates..... lb.	—	—	496,023	680,792	1,046,160	1,046,160
Zinc..... lb.	274,269,956	21,420,484	253,006,168	28,412,593	270,310,195	37,654,210
NON-METALLICS:						
Barite..... tons	2,728	19,000	2,875	26,650	1,632	16,317
Coal..... tons	1,636,792	7,153,330	1,763,899	8,630,285	1,780,334	9,811,253
Diatomite..... tons	41	1,027	59	1,472	24	817
Gypsum..... tons	47,649	387,404	58,736	523,298	82,426	574,707
Iron oxides (ochre)..... tons	427	5,367	58	701	1,086	9,772
Mica (schist)..... tons	803	23,420	904	24,240	251	8,530
Peat moss..... tons	49,263	1,546,149	46,104	1,588,349	51,496	1,928,651
Quartz..... tons	9,028	26,865	34,569	109,975	30,228	189,509
Sodium carbonate..... tons	—	—	163	1,793	—	—
Sulphur..... tons	126,622	1,255,008	157,162	1,476,445	144,450	1,417,528
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS:						
Cement..... bbl.	771,955	1,739,966	863,740	1,896,772	1,027,981	2,441,304
Clay products..... —	—	859,645	—	1,147,144	—	1,392,417
Lime:						
Quicklime..... tons	44,494	519,697	46,346	592,619	50,886	888,853
Hydrated lime..... tons	4,581	50,555	4,280	58,499	6,787	131,012
Sand and gravel..... tons	4,505,236	1,798,577	7,634,917	3,703,090	7,058,477	3,796,406
Stone..... tons	296,319	431,281	1,037,098	1,241,748	1,257,671	1,410,254
Total.....	—	74,622,846	—	116,772,621	—	148,223,614

1. Considerable arsenic is contained in auriferous quartz ores exported. However this is not paid for and data relating to its possible recovery are unobtainable.

2. Includes sulphur content of pyrites shipped and estimated sulphur contained in sulphuric acid and other products made from waste smelter gases.

TABLE 15. Mineral Production of Yukon and the North West Territories, 1946-1948

Product	1946		1947		1948	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
YUKON						
METALLICS:						
Gold..... fine oz.	45,286	1,664,260	47,745	1,671,075	60,614	2,121,490
Lead..... lb.	52,144	3,520	1,145,256	156,556	4,598,665	829,599
Silver..... fine oz.	31,230	26,124	372,051	267,877	1,718,618	1,288,964
NON-METALLICS:						
Coal..... tons	-	-	-	-	3,801	25,857
Total	-	1,693,904	-	2,095,508	-	4,265,910
NORTH WEST TERRITORIES						
Gold..... fine oz.	23,420	860,685	62,517	2,188,095	101,625	3,556,875
Pitchblende products.....	1	1	1	1	1	1
Silver..... fine oz.	6,112	5,113	45,355	32,655	25,382	19,036
NON-METALLIC:						
Natural gas..... M cu.ft.	1,500	335	-	-	150,000	15,000
Petroleum, crude..... bbl.	177,282	173,392	227,474	500,238	350,541	676,574
Total	-	1,039,525	-	2,720,988	-	4,267,485

1. Data not available for publication.

TABLE 16. Tonnage of Ore Mined and Rock Quarried in the Canadian Mining Industry, 1939-1948

	1939	1940	1941	1942	1943
Gold quartz ores.....	17,105,744	18,986,306	20,031,736	17,722,866	12,853,610
Copper-gold-silver ores.....	8,474,855	8,931,291	9,263,071	8,575,626	8,251,579
Nickel-copper ores.....	7,859,496	8,361,532	9,974,272	12,081,545	12,925,590
Silver-cobalt ores.....	60,431	43,245	11,507	25,550	39,184
Silver-lead-zinc ores.....	2,195,138	2,640,973	2,816,974	2,951,480	3,252,657
Miscellaneous metals (iron ore etc.).....	191,654	306,056	883,851	1,120,478	1,359,008
Asbestos.....	6,650,416	7,612,150	7,707,367	8,233,516	7,929,471
Feldspar and nepheline syenite.....	79,346	101,645	57,861	77,049	90,416
Quartz, exclusive of sand (shipments).....	273,839	228,065	335,085	487,664	947,195
Gypsum and anhydrite.....	1,532,423	1,466,820	1,532,228	794,886	430,822
Talc and soapstone.....	14,111	20,514	38,067	30,376	22,128
Iron oxides.....	10,049	15,623	15,917	15,629	12,648
Other non-metals.....	216,253	306,765	412,159	457,251	529,326
Stone, all kinds, quarries (exclusive of stone used for cement and lime).....	5,443,522	7,447,665	7,940,801	7,978,066	7,222,950
Stone used for the manufacture of cement.....	1,379,858	1,765,944	2,086,781	2,155,750	1,994,202
Estimate used for the manufacture of lime.....	900,000	1,280,949	1,530,200	1,574,508	1,614,481
Total (other than coal).....	52,387,135	59,515,543	64,637,877	64,282,240	59,475,267
	1944	1945	1946	1947	1948
Gold quartz ores.....	10,790,495	9,780,555	10,712,615	11,632,841	13,630,705
Copper-gold-silver ores.....	7,395,608	5,914,580	5,009,490	5,462,233	6,496,499
Nickel-copper ores.....	12,954,201	10,854,735	8,224,751	11,137,609	11,688,146
Silver-cobalt ores.....	27,184	30,519	32,841	10,572	8,905
Silver-lead-zinc ores.....	2,911,824	3,086,683	2,805,658	2,857,461	3,147,849
Miscellaneous metals.....	1,250,800	1,605,514	2,131,691	2,242,743	1,904,683
Asbestos.....	7,778,805	8,765,370	9,127,859	9,837,045	10,759,016
Feldspar and nepheline syenite.....	84,089	91,535	71,214	142,296	139,680
Quartz.....	988,758	807,002	879,310	1,315,427	1,341,914
Gypsum.....	536,356	830,723	2,027,045	2,604,075	3,487,964
Talc and soapstone.....	30,553	26,599	28,624	25,834	30,319
Iron oxides.....	15,519	8,189	8,823	20,664	22,935
Other non-metals.....	536,957	614,286	589,036	685,473	754,561
Stone, all kinds, quarries (exclusive of stone used for cement and lime).....	5,994,992	6,205,555	8,056,260	10,889,388	11,696,643
Stone used for the manufacture of cement.....	1,939,900	1,919,858	2,525,653	3,100,829	3,449,947
Estimate used for the manufacture of lime.....	1,571,451	1,482,077	1,445,891	1,730,819	1,792,700
Total	54,807,492	52,023,780	53,676,761	63,695,309	70,352,466

TABLE 17. Copper, Lead and Zinc in U.S. Cents Per Pound; Silver, U.S. Cents Per Ounce (From the American Bureau of Metal Statistics)

Year	Copper, New York ²	Lead, New York	Zinc ¹	Silver, New York	Year	Copper, New York ²	Lead, New York	Zinc ¹	Silver, New York
	Yearly average	Yearly average	Yearly average	Yearly average		Yearly average	Yearly average	Yearly average	Yearly average ³
1889.....	13.750	3.930	5.023	93.600	1919.....	18.691	5.759	6.988	111.127
1890.....	15.750	4.480	5.550	104.600	1920.....	17.456	7.987	7.671	100.902
1891.....	12.625	4.350	5.020	98.800	1921.....	12.502	4.545	4.655	62.652
1892.....	11.550	4.090	4.630	87.600	1922.....	13.382	5.734	5.716	67.520
1893.....	10.750	3.730	4.080	78.200	1923.....	14.421	7.267	6.607	64.874
1894.....	9.560	3.290	3.520	63.000	1924.....	13.024	8.097	6.344	66.788
1895.....	10.760	3.230	3.630	65.280	1925.....	14.042	9.020	7.622	69.063
1896.....	10.880	2.980	3.940	67.060	1926.....	13.795	8.417	7.337	62.107
1897.....	11.290	3.580	4.120	59.790	1927.....	12.920	6.755	6.242	56.370
1898.....	12.030	3.780	4.570	58.260	1928.....	14.570	6.305	6.027	58.176
1899.....	16.670	4.470	5.750	59.580	1929.....	18.107	6.833	6.512	52.993
1900.....	16.190	4.370	4.390	61.330	1930.....	12.982	5.517	4.556	38.154
1901.....	16.110	4.330	4.070	58.950	1931.....	8.116	3.243	3.640	28.700
1902.....	11.626	4.069	4.840	52.160	1932.....	5.555	3.180	2.876	27.892
1903.....	13.235	4.237	5.191	53.570	1933.....	7.025	3.869	4.029	34.727
1904.....	12.823	4.309	4.931	57.221	1934.....	8.428	3.860	4.158	47.973
1905.....	15.590	4.707	5.730	60.352	1935.....	8.649	4.065	4.328	64.273
1906.....	19.278	5.657	6.048	66.791	1936.....	9.474	4.710	4.901	45.087
1907.....	20.004	5.325	5.812	65.327	1937.....	13.167	6.009	6.519	44.883
1908.....	13.208	4.200	4.578	52.864	1938.....	10.000	4.739	4.610	43.225
1909.....	12.982	4.273	5.352	51.502	1939.....	10.965	5.053	5.110	39.082
1910.....	12.738	4.446	5.370	53.486	1940.....	11.296	5.179	6.335	34.773
1911.....	12.376	4.420	5.608	53.304	1941.....	11.797	5.793	7.474	34.783
1912.....	16.341	4.471	6.799	60.635	1942.....	11.775	6.481	8.250	38.393
1913.....	15.269	4.370	5.504	59.791	1943.....	11.775	6.500	8.250	44.750
1914.....	13.602	3.862	5.061	54.811	1944.....	11.775	6.500	8.250	44.750
1915.....	17.275	4.673	13.054	49.684	1945.....	11.775	6.500	8.250	51.928
1916.....	27.202	6.958	12.634	65.661	1946.....	13.820	8.109	8.726	80.151
1917.....	27.180	8.787	8.730	81.411	1947.....	20.958	14.673	10.500	71.820
1918.....	24.628	7.413	7.890	96.775	1948.....	22.038	18.043	13.589	74.361

1. To 1902, price of zinc at New York; for later years, price of zinc at East St. Louis.

2. To 1898, price of Lake Copper.

3. 1932-1946—for other than newly mined domestic.

TABLE 18. Average Annual Metal Prices, in Canadian Dollars, 1930-1948

Year	Gold	Silver	Copper	Lead	Zinc
	Troy oz.	Troy oz.	Pound	Pound ¹	Pound ¹
	\$	\$	\$	\$	\$
1930.....	20.67	0.381	0.130 ²	0.039	0.036
1931.....	21.55	0.298	0.0837 ²	0.027	0.025
1932.....	23.47	0.317	0.0638	0.021	0.024
1933.....	28.60	0.378	0.0745	0.024	0.032
1934.....	34.50	0.475	0.0742	0.024	0.030
1935.....	35.19	0.648	0.0780	0.031	0.031
1936.....	35.03	0.451	0.0948	0.039	0.033
1937.....	34.99	0.449	0.131	0.051	0.0490
1938.....	35.17	0.435	0.0997 ¹	0.034	0.031
1939.....	36.14	0.405	0.101	0.032	0.031
1940.....	38.50	0.382	0.101	0.034	0.034
1941.....	38.50	0.3826	0.101	0.034	0.034
1942.....	38.50	0.4216	0.101	0.034	0.034
1943.....	38.50	0.4525	0.1175	0.0375	0.040
1944.....	38.50	0.430	0.120	0.045	0.043
1945.....	38.50	0.470	0.1255	0.050	0.0644
1946.....	36.75	0.8365	0.128	0.0675	0.0781
1947.....	35.00	0.72	0.2039	0.1367	0.1123
1948.....	35.00	0.75	0.2235	0.1804	0.1393

1. Based on London; prices controlled by Government 1939-1947 and subject to revision since 1939.

2. Based on New York; 1932-1942 based on London.

TABLE 19. Principal Statistics of the Mineral Industry, by Industries, 1944-1948

1 Year	2 Number of active firms	3 Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	4 Number of employees	5 Salaries and wages	6 Cost of process supplies, purchased elec- tricity and fuel also freight and smelter charges ¹	7 Net value of bullion, ore, concentrates residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries
				\$	\$	\$
Metal Mining Industries						
ALLUVIAL GOLD MINES						
1944.....	47	47	211	598,556	84,104	1,197,021
1945.....	38	38	234	692,683	80,748	1,546,005
1946.....	39	39	340	1,112,984	155,943	1,693,568
1947.....	46	46	458	1,684,449	238,079	1,635,086
1948.....	47	47	495	1,603,065	483,149	2,286,413
AURIFEROUS QUARTZ MINES						
1944.....	257	262	17,226	37,023,505	19,029,032	75,234,384
1945.....	712	716	18,388	37,690,177	18,242,253	67,577,062
1946.....	684	686	21,973	47,211,062	22,080,531	66,342,152
1947.....	516	517	22,906	54,612,474	26,398,328	69,727,950
1948.....	280	282	22,566	59,515,678	28,277,570	80,386,512
COPPER-GOLD-SILVER MINES						
1944.....	23	26	5,175	10,710,071	24,191,776	38,198,039
1945.....	38	41	4,658	9,663,612	21,134,603	38,165,269
1946.....	41	43	4,958	10,243,487	16,870,567	37,433,982
1947.....	31	32	5,220	13,149,093	18,125,109	52,173,584
1948.....	35	37	6,401	17,919,526	22,178,942	85,652,206
SILVER-COBALT MINES						
1944.....	10	11	165	260,575	99,600	323,260
1945.....	7	8	166	247,203	69,967	82,508
1946.....	11	11	247	404,012	118,363	207,483
1947.....	12	12	183	359,963	90,374	253,563
1948.....	17	17	172	413,095	177,653	321,415
SILVER-LEAD-ZINC MINES						
1944.....	20	20	2,769	5,810,290	4,489,198	16,802,759
1945.....	20	20	2,485	5,473,582	4,234,261	22,867,203
1946.....	23	31	2,451	5,987,111	9,079,895	39,262,606
1947.....	60	62	3,240	8,304,915	18,262,251	59,862,251
1948.....	77	84	4,040	11,421,086	22,923,228	85,993,977
NICKEL-COPPER MINES						
1944.....	5	9	7,628	14,678,695	9,048,726	54,621,089
1945.....	4	8	5,997	13,008,156	7,790,226	45,605,169
1946.....	5	9	4,439	10,166,680	5,332,956	34,960,264
1947.....	18	24	6,144	15,685,963	8,284,711	46,211,129
1948.....	11	15	6,920	20,492,920	5,976,740	50,976,280
MISCELLANEOUS METAL MINES						
1944.....	27	27	1,385	2,809,013	2,057,850	3,303,143
1945.....	24	23	985	2,041,349	2,519,571	1,756,559
1946.....	21	21	1,037	2,338,442	3,479,336	3,708,109
1947.....	18	19	1,183	2,970,903	4,472,117	5,710,222
1948.....	25	26	1,296	3,878,527	4,100,667	4,624,994
NON-FERROUS METAL SMELTING AND REFINING						
1944.....	9	16	23,927	44,536,991	350,903,763 ²	123,303,038 ³
1945.....	9	17	16,771	33,853,120	265,777,645 ²	89,898,878 ³
1946.....	9	15	14,546	30,648,361	235,152,602 ²	69,565,922 ³
1947.....	9	16	17,449	40,767,871	337,235,290 ²	115,798,652 ³
1948.....	9	17	19,701	52,276,837	429,553,076 ²	146,830,891 ³
Total Metal Mining Industries						
1944.....	398 ⁴	418	58,486	116,427,696	409,904,049	312,982,733
1945.....	852 ⁴	871	49,684	102,669,882	319,849,277	267,498,653
1946.....	843 ⁴	855	49,991	108,112,139	292,270,193	253,174,086
1947.....	710 ⁴	728	56,783	137,535,631	413,106,345	351,372,427
1948.....	501 ⁴	525	61,591	167,520,734	513,671,025	457,072,688

1. 213 producing.

2. Includes fuel and electricity used for metallurgical purposes and cost of ores, etc., treated.

3. Value added by smelting. 4. See end of table.

5. 183 producing. 6. 178 producing.

7. 221 producing. 8. 248 producing.

TABLE 19. Principal Statistics of the Mineral Industry, by Industries, 1944-1948 - Con.

1	2	3	4	5	6	7
Year	Number of active firms	Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel also freight and smelter charges ¹	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries
				\$	\$	\$
Non-Metal Mining Industries, including Fuels						
Fuels²						
COAL						
1944.....	341	394	25,596	55,020,537	12,712,820	54,344,700
1945.....	324	373	25,301	49,431,965	11,604,450	52,642,796
1946.....	315	365	25,487	51,343,975	12,637,105	59,607,029
1947.....	312	350	22,227	46,312,295	11,701,500	61,617,921
1948.....	311	351	24,319	58,503,607	16,226,321	85,624,145
NATURAL GAS						
1944.....	211	3,621	1,810	2,885,654	201,152	9,571,205
1945.....	218	3,748	1,890	2,993,091	245,812	10,614,782
1946.....	219	3,825	1,655	2,491,361	248,437	10,339,738
1947.....	186	3,799	1,784	3,057,249	240,319	12,093,013
1948.....	175	3,833	1,831	2,918,941	67,065	14,622,672
PETROLEUM						
1944.....	224	2,264	2,547	5,814,676	1,242,795	14,575,563
1945.....	229	2,222	1,968	3,898,662	866,059	13,255,862
1946.....	240	2,314	1,563	3,260,571	1,024,016	13,701,033
1947.....	228	2,296	1,296	3,055,108	876,592	18,666,709
1948.....	246	2,581	1,641	4,391,929	2,052,808	35,336,167
Total Fuels						
1944.....	776	6,279	23,953	63,720,867	14,156,767	78,491,468
1945.....	771	6,343	29,159	56,323,718	12,716,321	76,513,440
1946.....	774	6,504	28,705	57,095,907	13,909,648	83,647,800
1947.....	726	6,445	25,307	52,424,652	12,818,411	92,377,643
1948.....	732	6,765	27,791	65,814,477	18,346,194	135,582,984
Other Non-Metal Mining Industries						
ASBESTOS						
1944.....	9	10	4,050	6,401,185	4,016,059	17,820,317
1945.....	11	12	4,237	6,679,885	4,235,725	19,857,074
1946.....	11	12	4,547	7,771,921	4,975,892	20,269,687
1947.....	9	12	4,885	9,165,450	6,824,465	26,191,500
1948.....	11	15	4,959	12,136,615	7,856,902	34,421,819
FELDSPAR, QUARTZ AND NEPHELINE SYENITE						
1944.....	41	42	529	772,385	467,937	1,636,093
1945.....	31	31	483	767,517	467,290	1,626,590
1946.....	34	36	517	876,034	440,701	1,727,972
1947.....	38	39	593	1,134,107	719,986	1,921,871
1948.....	36	36	562	1,184,257	666,906	2,598,159
GYPSUM						
1944.....	8	14	328	490,872	387,941	1,124,037
1945.....	7	13	434	647,287	575,645	1,207,645
1946.....	8	14	753	1,246,673	806,571	2,890,156
1947.....	8	13	908	1,695,711	1,049,297	3,733,132
1948.....	9	14	995	2,272,358	1,871,868	3,771,013
IRON OXIDES (OCHRE)						
1944.....	6	6	55	49,876	37,485	112,765
1945.....	5	5	51	58,011	35,401	136,652
1946.....	5	5	60	77,727	36,017	116,251
1947.....	6	6	54	82,369	40,904	217,418
1948.....	7	7	55	84,559	38,265	165,126
MICA						
1944.....	70	70	400	359,797	56,624	784,402
1945.....	40	40	174	190,138	50,492	182,778
1946.....	27	27	129	153,616	38,086	160,953
1947.....	38	38	118	147,351	28,595	172,308
1948.....	34	34	109	118,982	32,850	187,098

1. See footnote at end of table.

- 2. Production of peat since 1929 included with the other non-metallics.

TABLE 19. Principal Statistics of the Mineral Industry, by Industries, 1944-1948 - Con.

1	2	3	4	5	6	7
Year	Number of active firms	Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel, also freight and smelter charges ¹	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries
				\$	\$	\$
Other Non-Metal Mining Industries - Con.						
PEAT ²						
1944.....	39	39	1,183	1,154,009	383,376	1,780,000
1945.....	37	37	1,233	1,304,249	516,104	1,874,202
1946.....	41	41	1,391	1,562,689	671,161	2,249,651
1947.....	42	42	1,224	1,602,265	672,144	2,136,495
1948.....	41	41	1,032	1,532,977	810,071	2,597,754
SALT						
1944.....	8	9	710	1,302,143	1,498,424	3,287,660
1945.....	9	9	724	1,329,384	1,623,241	3,241,456
1946.....	9	9	713	918,566	1,590,416	2,890,423
1947.....	10	10	700	1,399,693	1,872,839	3,493,193
1948.....	11	11	673	1,367,353	2,062,682	3,765,785
TALC AND SOAPSTONE						
1944.....	6	6	113	133,883	68,165	289,084
1945.....	5	5	103	134,782	79,582	215,306
1946.....	5	5	87	117,551	63,568	240,116
1947.....	5	5	73	110,527	41,690	224,687
1948.....	5	5	58	102,087	29,250	280,573
MISCELLANEOUS NON-METAL MINES						
1944.....	50	52	865	1,500,250	1,188,860	2,797,719
1945.....	50	51	879	1,601,068	1,378,366	3,037,352
1946.....	42	43	911	1,582,846	1,389,098	2,859,009
1947.....	41	42	1,038	2,004,489	1,651,544	3,479,423
1948.....	38	40	1,161	2,497,918	1,977,985	4,056,367
Total Other Non-Metal Mining Industries						
1944.....	237	248	8,233	12,164,400	8,104,871	29,632,077
1945.....	195	203	8,318	12,712,321	8,961,846	31,379,055
1946.....	182	192	9,108	14,307,623	10,011,510	33,404,218
1947.....	199	207	9,593	17,341,962	12,901,464	41,570,032
1948.....	192	203	9,604	21,297,106	15,346,779	51,843,694
Total Non-Metal Mining Industries, including Fuels						
1944.....	1,013	6,527	38,186	75,885,267	22,261,638	108,123,545
1945.....	966	6,546	37,477	69,036,039	21,678,167	107,892,495
1946.....	956	6,696	37,813	71,403,530	23,921,158	117,052,018
1947.....	923	6,632	34,900	69,766,614	25,719,873	133,947,675
1948.....	924	6,968	37,393	87,111,583	33,692,973	187,426,578
Clay Products and Other Structural Materials						
CLAY PRODUCTS						
Brick, Tile and Sewer Pipe						
1944.....	98	102	1,889	2,819,912	1,451,686	4,711,125
1945.....	92	98	2,254	3,348,351	1,892,051	6,093,719
1946.....	102	111	2,879	4,496,283	2,553,369	8,461,331
1947.....	106	115	3,218	5,750,568	3,152,905	10,483,320
1948.....	100	110	3,392	6,964,013	3,968,857	12,743,359
STONEWARE AND POTTERY						
1944.....	8	8	358	356,892	66,816	767,798
1945.....	8	8	434	479,855	82,632	844,690
1946.....	8	8	558	619,679	90,308	1,102,359
1947.....	9	9	334	454,137	66,351	783,613
1948.....	7	7	354	541,752	57,746	859,086

1. See footnote at end of this table.

2. Includes data on peat fuel, peat moss and peat humus.

TABLE 19. Principal Statistics of the Mineral Industry, by Industries, 1944-1948 - Conc.

1	2	3	4	5	6	7
Year	Number of active firms	Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel also freight and smelter charges ¹	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries
				\$	\$	\$
Total Clay Products²						
1944	106	110	2,247	3,176,804	1,518,502	5,478,923
1945	100	106	2,688	3,828,206	1,974,683	6,938,409
1946	110	119	3,437	5,115,962	2,643,677	9,563,690
1947	115	124	3,352	6,204,705	3,219,256	11,266,933
1948	107	117	3,746	7,505,765	4,026,603	13,602,445
Other Structural Materials³						
CEMENT						
1944	3	8	1,207	2,254,775	5,764,387	6,882,354
1945	3	8	1,317	2,398,117	6,005,605	9,416,426
1946	3	8	1,524	2,929,020	8,793,963	12,930,058
1947	3	8	1,650	3,679,446	10,132,574	13,449,437
1948	3	8	1,723	4,356,086	12,857,198	17,704,519
LIME						
1944	38	42	815	1,414,426	2,046,550	5,005,235
1945	39	44	856	1,473,829	2,068,489	4,663,859
1946	37	41	918	1,616,839	2,412,041	4,910,127
1947	37	42	1,038	2,052,801	3,086,779	5,763,244
1948	37	42	1,121	2,459,299	3,790,233	7,284,638
SAND AND GRAVEL						
1944	1,541	5,381	1,773	2,494,657	391,738	9,888,361
1945	1,524	5,011	2,074	2,759,206	416,390	10,151,973
1946	1,589	5,252	2,793	3,600,797	579,489	14,950,211
1947	1,621	5,458	3,430	4,941,148	813,027	22,301,404
1948	1,740	6,102	4,197	7,057,193	1,101,024	29,528,572
STONE						
1944	405	466	2,164	3,154,689	1,497,880	5,661,297
1945	361	429	2,154	3,114,647	1,451,715	6,714,985
1946	411	486	2,720	3,970,404	1,691,598	9,494,113
1947	409	483	3,166	5,380,259	2,255,930	14,208,819
1948	435	554	3,082	5,990,922	2,617,663	15,330,890
Total Other Structural Materials						
1944	1,987	5,897	5,959	9,318,547	9,700,555	27,437,267
1945	1,927	5,492	6,401	9,745,799	9,942,199	30,947,243
1946	2,040	5,787	7,955	12,117,060	13,477,091	42,284,509
1947	2,070	6,001	9,284	16,053,654	16,288,310	55,722,904
1948	2,215	6,706	10,123	19,863,500	20,366,118	69,848,619
Total Clay Products and Other Structural Materials						
1944	2,093	6,007	8,206	12,495,351	11,219,057	32,916,190
1945	2,027	5,598	9,089	13,574,005	11,916,882	37,885,632
1946	2,150	5,906	11,392	17,233,022	16,120,768	51,848,199
1947	2,185	6,115	12,836	22,258,359	19,507,566	66,989,837
1948	2,322	6,823	13,869	27,369,265	24,392,721	83,451,064
GRAND TOTAL OF ALL INDUSTRIES						
1944	3,504	12,952	104,878	204,808,314	443,384,744	454,022,468
1945	3,845	13,015	96,250	185,279,926	353,444,326	413,276,800
1946	3,949	13,457	99,196	196,748,691	332,312,119	422,074,303
1947	3,818	13,495	104,519	229,560,604	458,333,786	552,309,949
1948	3,746	14,315	112,855	282,001,582	571,756,719	727,950,430

Note. The net value as given in column 7 represents the gross value as given by the operator less the cost of items indicated in column 6.

1. See note above.

2. Includes kaolin and other clays.

3. A considerable proportion of the values shown for lime and stone sales represents shipments for chemical purposes. -See chapter 9.

TABLE 20. Principal Statistics of the Mineral Industry, by Provinces, 1944-1948

1	2	3	4	5	6
Year	Number of operating mines, oil and gas wells, quarries gravel pits, etc.	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel also freight and smelter charges ^{1, 2}	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries ³
			\$	\$	\$
NOVA SCOTIA					
1944.....	509	13,538	30,815,335	7,664,988	25,208,621
1945.....	656	14,091	26,707,708	7,265,785	23,684,321
1946.....	660	14,560	27,572,966	7,912,532	26,425,106
1947.....	647	11,716	21,637,321	7,092,436	25,851,459
1948.....	711	13,957	32,491,530	11,482,321	44,069,431
NEW BRUNSWICK					
1944.....	429	1,631	2,240,478	463,353	3,631,871
1945.....	427	1,525	2,200,188	480,155	3,636,205
1946.....	433	1,600	2,363,247	602,186	4,236,861
1947.....	431	1,473	2,349,749	754,369	5,067,591
1948.....	421	1,639	3,039,036	1,128,770	5,959,256
QUEBEC					
1944.....	3,747	27,973	49,498,836	191,719,356	145,964,861
1945.....	3,441	22,374	39,674,306	119,179,856	106,701,600
1946.....	3,492	22,799	41,793,277	103,398,023	97,020,447
1947.....	3,529	24,930	50,729,876	135,047,443	122,998,963
1948.....	3,837	27,809	64,395,934	178,689,225	165,762,032
ONTARIO					
1944.....	6,242	33,194	64,766,975	176,635,812	161,819,719
1945.....	6,379	30,634	61,414,603	153,297,060	155,367,764
1946.....	6,488	31,244	63,895,634	120,018,172	147,605,421
1947.....	6,420	34,727	80,436,924	171,660,372	194,853,504
1948.....	6,274	36,079	95,046,248	196,424,417	228,112,583
MANITOBA					
1944.....	145	1,732	3,369,320	9,697,444	10,288,654
1945.....	156	1,763	3,460,480	11,294,429	10,794,127
1946.....	178	2,242	4,446,790	11,719,343	12,480,188
1947.....	183	2,547	5,836,505	12,002,207	14,630,955
1948.....	376	2,736	7,156,024	20,299,821	21,861,157
SASKATCHEWAN					
1944.....	195	2,652	5,328,535	21,184,997	18,362,133
1945.....	198	2,457	5,020,119	20,969,841	19,382,105
1946.....	241	2,957	5,672,652	23,062,280	22,743,522
1947.....	314	2,831	6,856,253	29,844,989	29,577,508
1948.....	178	2,881	8,007,116	31,422,833	44,998,172

Note: Plants in the provinces do not add to Canada total, owing to the fact that a plant located on the Manitoba-Saskatchewan boundary is counted but once.

1. Includes fuel and electricity used for metallurgical purposes.

2. See footnote, preceding table.

3. See footnote, preceding table.

TABLE 20. Principal Statistics of the Mineral Industry, by Provinces, 1944-1948 - Con.

1	2	3	4	5	6
Year	Number of operating mines, oil and gas wells, quarries gravel pits, etc.	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel also freight and smelter charges ^{1, 2}	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries ³
			\$	\$	\$
ALBERTA					
1944	882	11,582	23,389,050	5,674,431	42,672,706
1945	935	11,438	22,867,506	4,991,551	44,421,660
1946	1,022	11,476	23,641,650	5,880,366	50,981,943
1947	1,040	11,365	25,528,877	6,477,949	58,099,365
1948	1,375	11,951	29,085,041	8,884,543	80,931,360
BRITISH COLUMBIA					
1944	724	11,871	23,118,465	30,058,974	43,986,511
1945	697	11,450	22,520,369	35,678,748	47,859,524
1946	836	11,562	25,109,066	59,197,865	58,629,880
1947	825	13,546	31,631,916	94,119,191	97,781,055
1948	1,055	14,384	38,033,557	121,198,606	129,984,244
NORTHWEST TERRITORIES					
1944	71	566	1,798,896	213,041	1,219,472
1945	120	345	825,572	218,150	252,227
1946	104	510	1,346,718	415,456	582,600
1947	97	836	2,468,094	825,809	1,874,341
1948	78	826	2,721,296	1,177,924	3,065,192
YUKON					
1944	8	139	482,424	72,348	867,920
1945	7	173	589,075	68,751	1,177,267
1946	3	246	906,691	105,896	1,368,335
1947	9	548	2,085,089	509,021	1,575,208
1948	10	593	2,025,800	1,048,259	3,207,003
Canada					
1944	12,952	104,878	204,808,314	443,384,744	454,022,468
1945	13,016	96,250	185,279,926	353,444,326	413,276,800
1946	13,457	99,196	196,748,691	332,312,119	422,074,303
1947	13,495	104,519	229,560,604	458,333,786	552,309,949
1948	14,315	112,855	282,001,582	571,756,719	727,950,430

Note: Plants in the provinces do not add to Canada total, owing to the fact that a plant located on the Manitoba-Saskatchewan boundary is counted but once.

1. Includes fuel and electricity used for metallurgical purposes.
2. The value of Pitchblende refinery products are not included.
3. See footnote, preceding table.

TABLE 21. Employees, Salaries and Wages in the Mineral Industry, by Provinces, 1947

Province	Average number of employees ¹					Salaries and wages		
	Administrative		Workmen		Total ²	Salaries	Wages	Total
	Male	Female	Male	Female				
						\$	\$	\$
Nova Scotia.....	465	53	11,189	9	11,716	1,297,561	20,339,760	21,637,321
New Brunswick.....	54	11	1,394	14	1,473	149,817	2,199,932	2,349,749
Quebec.....	2,216	369	22,192	153	24,930	6,777,684	43,952,192	50,729,876
Ontario.....	2,883	439	31,218	187	34,727	11,048,303	69,388,621	80,436,924
Manitoba.....	211	34	2,252	50	2,547	788,534	5,047,971	5,836,505
Saskatchewan.....	293	38	2,470	10	2,831	1,024,735	5,831,518	6,856,253
Alberta.....	905	109	10,205	146	11,365	2,482,998	23,045,879	25,528,877
British Columbia.....	1,450	223	11,635	238	13,546	5,463,176	26,168,740	31,631,916
Yukon.....	40	5	503	-	548	179,398	1,905,691	2,085,089
Northwest Territories.....	114	17	689	16	836	469,488	1,998,606	2,468,094
Canada.....	8,631	1,318	93,747	823	104,519	29,681,694	199,878,910	229,560,604

1. The average number of wage-earners was obtained by adding the monthly figures for individual companies and dividing by the number of months worked, the average number of wage-earners in the industry, as in the previous years, is the sum of these individual averages.

2. The data are not inclusive of all individuals or syndicates engaged exclusively in prospecting or general exploration.

TABLE 22. Employees, Salaries and Wages in the Mineral Industry, by Industries, 1947

Industry	Average number of employees					Salaries and wages		
	Administrative		Workmen		Total	Salaries	Wages	Total
	Male	Female	Male	Female				
						\$	\$	\$
METAL MINING								
Alluvial Gold.....	28	3	422	5	458	122,144	1,562,305	1,684,449
Auriferous Quartz.....	2,095	164	20,462	185	22,906	7,605,569	47,005,905	54,612,474
Copper-Gold-Silver.....	559	101	4,481	79	5,220	2,094,327	11,054,766	13,149,093
Silver-Cobalt.....	21	3	158	1	183	75,807	284,156	359,963
Silver-Lead-Zinc.....	326	36	2,847	31	3,240	1,446,827	6,858,088	8,304,915
Nickel-Copper.....	436	34	5,668	6	6,144	1,772,861	13,913,102	15,685,963
Miscellaneous Metal Mines.....	99	20	1,059	5	1,183	378,856	2,592,047	2,970,903
Non-Ferrous Smelting and Refining.....	2,073	465	14,845	66	17,449	7,690,271	33,077,600	40,767,871
FUELS								
Coal.....	1,362	101	20,753	11	22,227	3,592,725	42,719,570	46,312,295
Natural Gas.....	160	111	1,498	15	1,784	581,825	2,475,424	3,057,249
Petroleum.....	105	19	1,156	16	1,296	292,173	2,762,935	3,055,108
NON-METALLIC								
Asbestos.....	416	72	4,364	33	4,885	1,234,624	7,930,826	9,165,450
Feldspar and Quartz.....	48	3	539	3	593	138,255	995,852	1,134,107
Gypsum.....	35	9	861	3	908	110,469	1,585,242	1,695,711
Iron Oxides.....	5	3	46	-	54	13,816	68,553	82,369
Mica.....	10	4	95	9	118	26,887	120,464	147,351
Peat.....	51	15	1,059	99	1,224	157,340	1,444,925	1,602,265
Salt.....	44	18	582	56	700	239,576	1,160,117	1,399,693
Talc and Soapstone.....	10	2	61	-	73	32,766	77,761	110,527
Miscellaneous.....	106	13	915	4	1,038	304,880	1,699,609	2,004,489
STRUCTURAL MATERIALS AND CLAY PRODUCTS								
Cement.....	107	9	1,518	16	1,650	328,748	3,350,698	3,679,446
Clay Products.....	163	44	3,190	155	3,552	494,173	5,710,532	6,204,705
Lime.....	64	14	949	11	1,038	215,227	1,837,574	2,052,801
Sand and Gravel.....	122	25	3,273	10	3,430	291,568	4,649,580	4,941,148
Stone.....	186	30	2,946	4	3,166	438,980	4,941,279	5,380,259
Total.....	8,631	1,318	93,747	823	104,519	29,681,694	199,878,910	229,560,604

TABLE 23. Employees, Salaries and Wages in the Mineral Industry, by Provinces, 1948

Province	Average number of employees				Salaries and Wages			
	Administrative		Workmen		Total	Salaries	Wages	Total
	Male	Female	Male	Female				
						\$	\$	\$
Nova Scotia.....	753	52	13,144	8	13,957	2,309,267	30,182,263	32,491,530
New Brunswick.....	71	17	1,531	20	1,639	243,236	2,795,800	3,039,036
Quebec.....	2,445	420	24,807	137	27,809	8,305,027	56,090,907	64,395,934
Ontario.....	2,886	448	32,599	146	36,079	11,738,880	83,307,368	95,046,248
Manitoba.....	242	28	2,416	50	2,736	940,046	6,215,978	7,156,024
Saskatchewan.....	303	66	2,499	13	2,881	1,150,332	6,856,784	8,007,116
Alberta.....	931	105	10,775	140	11,951	2,828,813	26,256,228	29,085,041
British Columbia.....	1,728	251	12,202	203	14,384	6,055,962	31,977,595	38,033,557
Northwest Territories.....	127	9	675	15	826	502,431	2,218,865	2,721,296
Yukon.....	41	5	546	1	593	175,519	1,850,281	2,025,800
Canada.....	9,527	1,401	101,194	733	112,855	34,249,513	247,752,069	282,001,582

TABLE 24. Employees, Salaries and Wages in the Mineral Industry, by Industries, 1948

Industry	Average number of employees				Salaries and Wages			
	Administrative		Workmen		Total	Salaries	Wages	Total
	Male	Female	Male	Female				
						\$	\$	\$
METAL MINING								
Aluvial Gold.....	30	6	451	8	495	130,410	1,472,655	1,603,065
Auriferous Quartz.....	1,975	180	20,264	147	22,566	7,734,997	51,780,681	59,515,678
Copper-Gold-Silver.....	649	112	5,556	84	6,401	2,673,826	15,245,700	17,919,526
Silver-Cobalt.....	22	3	145	2	172	66,509	346,586	413,095
Silver-Lead-Zinc.....	497	44	3,452	47	4,040	1,880,694	9,540,392	11,421,086
Nickel-Copper.....	481	28	6,408	3	6,920	2,058,550	18,434,370	20,492,920
Miscellaneous Metal Mines.....	138	20	1,119	19	1,296	439,847	3,438,680	3,878,527
Non-Ferrous Smelting and Refining.....	2,350	508	16,785	58	19,701	8,917,548	43,359,289	52,276,837
FUELS								
Coal.....	1,676	93	22,538	12	24,319	4,905,478	53,598,129	58,503,607
Natural Gas.....	155	112	1,548	16	1,831	417,261	2,501,680	2,918,941
Petroleum.....	87	21	1,526	7	1,641	311,463	4,080,466	4,391,929
NON-METALLICS								
Asbestos.....	444	84	4,404	27	4,959	1,569,991	10,566,624	12,136,615
Feldspar and Quartz.....	50	5	505	2	562	157,752	1,026,505	1,184,257
Gypsum.....	41	9	944	1	995	151,999	2,120,359	2,272,358
Iron Oxides.....	4	3	48	-	55	11,157	73,402	84,559
Mica.....	11	2	88	8	109	18,167	100,815	118,982
Peat.....	57	18	897	60	1,032	180,004	1,352,973	1,532,977
Salt.....	63	19	546	45	673	198,349	1,169,004	1,367,353
Talc and Soapstone.....	9	1	48	-	58	29,035	73,052	102,087
Miscellaneous.....	120	17	1,020	4	1,161	325,306	2,172,612	2,497,918
STRUCTURAL MATERIALS								
Cement.....	114	9	1,589	11	1,723	346,453	4,009,633	4,356,086
Clay Products.....	160	36	3,403	147	3,746	574,250	6,931,515	7,505,765
Lime.....	72	13	1,025	11	1,121	259,675	2,199,624	2,459,299
Sand and Gravel.....	125	29	4,033	10	4,197	351,484	6,705,709	7,057,193
Stone.....	197	29	2,852	4	3,082	539,308	5,451,614	5,990,922
Total.....	9,527	1,401	101,194	733	112,855	34,249,513	247,752,069	282,001,582

TABLE 25. Wage-earners on Surface, Underground and in Mill, 1947

Province	Metal Mines			Fuels		Other ¹		
	Surface	Underground	Mill ²	Surface	Underground	Surface	Underground	Mill
Nova Scotia.....	7	6	1	1,475	8,140	1,068	-	501
New Brunswick.....	4	-	-	296	385	535	-	188
Quebec.....	2,534	3,774	5,903	-	-	5,109	583	4,442
Ontario.....	6,004	12,263	7,641	1,007	-	2,222	248	2,020
Manitoba.....	780	449	189	-	-	510	33	341
Saskatchewan.....	545	506	490	288	179	218	-	254
Alberta.....	-	-	-	4,013	5,537	154	-	647
British Columbia.....	1,557	2,681	3,783	613	1,511	1,198	-	530
Yukon.....	90	59	354	-	-	-	-	-
Northwest Territories ³	427	221	52	5	-	-	-	-
Canada.....	11,948	19,959	18,413	7,697	15,752	11,014	864	8,923

1. Includes asbestos, salt, gypsum, stone quarries, brick plants, etc., etc.

2. Including non-ferrous smelters and refineries.

3. Exclusive of data on mining of pitchblende ores.

TABLE 26. Administration and Office Employees at Places, Except at Mine or Plant, 1947

Plant Location	Average number of employees			Salaries and Wages
	Male	Female	Total	
				\$
Nova Scotia.....	410	93	503	1,091,987
New Brunswick.....	14	11	25	64,372
Quebec.....	213	87	300	822,744
Ontario.....	408	147	555	1,623,173
Manitoba.....	52	11	63	175,871
Saskatchewan.....	8	6	14	22,608
Alberta.....	711	172	883	2,306,300
British Columbia.....	122	49	171	613,411
Yukon.....	6	-	6	18,732
Northwest Territories.....	9	3	12	22,979
Canada.....	1,953	579	2,532	6,762,177

TABLE 27. Administration and Office Employees at Places, Except at Mine or Plant, 1947

Industry	Average number of employees			Salaries and Wages
	Male	Female	Total	
				\$
Metal Mining.....	380	131	511	1,641,782
Non-Ferrous Smelting and Refining.....	-	-	-	4,185,803
Fuels.....	1,324	369	1,693	246,695
Non-Metallic Mining.....	54	26	80	687,897
Structural Materials and Clay Products.....	195	53	248	-
Total.....	1,953	579	2,532	6,762,177

TABLE 28. Administration and Office Employees at Places, Except at Mine or Plant, 1948, by Provinces

Plant Location	Average number of employees			Salaries and Wages
	Male	Female	Total	
				\$
Nova Scotia.....	405	98	503	1,278,848
New Brunswick.....	14	12	26	61,810
Quebec.....	192	64	256	873,013
Ontario.....	372	182	554	1,759,050
Manitoba.....	41	8	49	162,254
Saskatchewan.....	11	8	19	30,459
Alberta.....	995	218	1,213	3,398,180
British Columbia.....	115	43	158	559,389
Northwest Territories.....	5	-	5	10,560
Yukon.....	4	1	5	15,334
Canada.....	2,154	634	2,788	8,148,897

TABLE 29. Administration and Office Employees at Places, Except at Mine or Plant, 1948

Industry	Average number of employees			Salaries and Wages
	Male	Female	Total	
				\$
Metal Mining.....	262	99	361	1,440,321
Non-ferrous Smelting and Refining.....				
Mineral Fuels.....	1,604	428	2,032	5,467,238
Non-metallic Mining.....	68	30	98	309,180
Structural Materials and Clay Products.....	220	77	297	932,158
Total	2,154	634	2,788	8,148,897

TABLE 30. Employees and Salaries and Wages Paid in Canadian Mining Industry, by Provinces 1934-1948

Year	Nova Scotia		New Brunswick		Quebec		Ontario		Manitoba		Saskatchewan	
	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$
1934.....	13,500	13,594,114	1,722	1,276,770	10,362	10,492,169	22,033	32,619,846	1,948	2,796,454	1,461	1,257,282
1935.....	14,550	14,301,510	2,390	1,865,407	11,811	12,794,800	25,264	38,152,140	2,346	3,403,649	1,457	1,343,041
1936.....	15,368	15,980,687	1,744	1,248,431	14,225	15,774,362	31,105	46,899,805	2,932	3,752,367	1,828	1,937,825
1937.....	15,629	18,373,958	3,012	1,509,063	19,121	22,708,131	36,238	58,891,339	3,159	4,301,366	2,307	2,372,443
1938.....	15,591	15,959,095	3,042	2,074,273	20,829	24,485,254	35,791	58,926,900	2,840	4,393,270	2,287	2,470,530
1939.....	15,202	17,371,518	3,263	2,311,835	20,872	25,689,382	37,233	63,220,042	3,027	4,541,992	2,026	2,347,264
1940.....	14,934	19,285,662	2,240	1,939,160	21,726	29,025,418	38,774	66,395,845	3,145	5,107,054	1,961	2,573,878
1941.....	15,246	21,388,809	2,262	2,097,842	23,149	34,008,021	40,496	74,902,555	3,101	5,312,075	1,977	3,105,529
1942.....	14,394	22,169,053	1,718	1,855,798	27,235	42,901,445	36,866	72,868,161	2,512	4,600,171	2,450	4,401,181
1943.....	13,852	25,348,097	1,570	1,828,019	31,491	52,859,348	33,516	67,732,244	1,777	3,497,951	3,067	5,737,896
1944.....	13,538	30,815,335	1,631	2,240,478	27,973	49,498,836	33,194	64,766,975	1,732	3,369,320	2,652	5,328,535
1945.....	14,091	26,707,708	1,525	2,200,188	22,374	39,674,306	30,634	61,414,603	1,763	3,460,480	2,457	5,020,119
1946.....	14,560	27,572,966	1,600	2,363,247	22,799	41,793,277	31,244	63,895,634	2,242	4,446,790	2,957	5,672,652
1947.....	11,716	21,637,321	1,473	2,349,749	24,930	50,729,876	34,727	80,436,924	2,547	5,836,505	2,831	6,856,253
1948.....	13,957	32,491,530	1,639	3,039,036	27,809	64,395,934	36,079	95,046,248	2,736	7,156,024	2,881	8,007,116
	Alberta		British Columbia		Yukon		Northwest Territories ¹		Canada			
	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$		
1934.....	9,843	9,792,297	12,270	15,482,102	286	660,814	80	154,338	73,505	88,126,186		
1935.....	9,706	10,862,198	12,352	16,479,606	333	809,067	47	69,341	80,256	100,080,559		
1936.....	10,376	11,850,463	12,827	17,908,553	566	1,372,917	28	40,812	90,999	116,766,222		
1937.....	10,843	12,924,934	14,282	21,487,277	691	1,502,692	132	221,181	105,414	144,292,384		
1938.....	10,612	12,811,975	15,179	21,975,143	794	1,962,941	310	584,619	107,275	145,644,000		
1939.....	10,548	13,097,818	14,587	21,698,690	728	1,605,671	273	468,996	107,759	152,353,208		
1940.....	10,628	14,535,789	14,420	23,227,719	617	1,518,747	441	880,414	108,886	164,489,686		
1941.....	11,141	17,065,351	14,801	25,797,418	501	1,570,683	553	1,174,903	113,227	186,423,186		
1942.....	11,435	19,628,105	14,323	27,166,996	398	1,221,952	701	1,737,398	112,032	198,550,260		
1943.....	12,316	21,825,643	13,399	25,703,433	352	1,043,663	800	1,999,661	112,140	207,575,955		
1944.....	11,582	23,389,050	11,871	23,118,465	139	482,424	566	1,798,896	104,878	204,808,314		
1945.....	11,438	22,867,506	11,450	22,520,369	173	589,075	345	825,572	96,250	185,279,926		
1946.....	11,476	23,641,650	11,562	25,109,066	246	906,691	510	1,346,718	99,196	196,748,691		
1947.....	11,365	25,528,877	13,546	31,631,916	548	2,085,089	836	2,468,094	104,519	229,560,604		
1948.....	11,951	29,085,041	14,384	38,033,557	593	2,025,800	826	2,721,296	112,855	282,001,582		

1. Data relating to mining of Pitchblende ores included with Yukon until 1942, these data not available since.

TABLE 31. Fuel and Electricity Used for All Purposes

No.	Industry	Bituminous		Anthracite coal		Lignite coal	Coke	Gasoline	Kerosene	Charcoal
		Canadian	Imported	From United States	From other countries					
		tons	tons	tons	tons	tons	tons	imp. gal.	imp. gal.	lb.
METAL MINING										
1	Alluvial gold..... quantity	14	-	-	-	-	-	56,797	741	-
2	\$	1,314	-	-	-	-	-	32,488	590	-
3	Auriferous quartz..... quantity	3,593	61,927	3,164	439	1,192	615	548,850	195,741	5,730
4	\$	63,967	786,349	48,419	6,037	14,079	8,701	212,731	30,016	539
5	Copper-gold-silver..... quantity	20,762	1,698	117	-	61,643	59	158,133	10,573	-
6	\$	165,235	22,609	2,276	-	292,613	970	57,994	3,033	-
7	Silver-cobalt..... quantity	12	314	538	-	-	-	7,054	245	-
8	\$	264	5,067	10,751	-	-	-	2,711	65	-
9	Silver-lead-zinc..... quantity	47,677	3,367	23	-	-	103	97,612	3,234	-
10	\$	287,350	43,888	494	-	-	627	39,354	891	-
11	Nickel-copper..... quantity	57	20,023	145	-	-	1	114,200	2,979	-
12	\$	794	187,398	2,220	-	-	16	36,630	682	-
13	Miscellaneous metals... quantity	719	1,338	2,558	-	-	-	193,353	3,838	-
14	\$	9,833	20,858	28,823	-	-	-	131,380	1,617	-
15	Non-ferrous smelting and quantity	218,678	628,825	-	-	-	269,019	339,041	20,390	1,095,347
16	refining. \$	1,865,101	5,518,164	-	-	-	3,659,149	103,595	4,554	26,437
17	Total..... quantity	291,512	717,492	6,545	439	62,835	269,797	1,515,040	237,741	1,101,077
18	\$	2,393,858	6,584,333	92,983	6,037	306,692	3,669,463	616,883	41,448	26,976
NON-METAL MINING FUELS										
19	Coal..... quantity	443,736	-	-	-	24,629	-	617,762	3,585	-
20	\$	1,699,980	-	-	-	27,339	-	199,283	989	-
21	Natural gas..... quantity	3	4	-	-	-	-	48,426	90	-
22	\$	60	58	-	-	-	-	15,083	28	-
23	Petroleum..... quantity	438	-	-	-	-	-	242,306	835	-
24	\$	4,389	-	-	-	-	-	69,388	250	-
25	Total..... quantity	444,177	4	-	-	24,629	-	908,494	4,510	-
26	\$	1,704,429	58	-	-	27,339	-	283,754	1,267	-
OTHER NON-METAL MINING										
27	Asbestos..... quantity	-	37,850	22,778	-	-	150	237,221	9,738	-
28	\$	-	385,076	233,005	-	-	2,100	77,922	1,741	-
29	Feldspar, nepheline sye- quantity	862	4,026	23	-	-	-	106,990	118,442	-
30	nite quartz. \$	10,126	36,903	474	-	-	-	32,935	18,999	-
31	Gypsum..... quantity	7,607	8,925	-	-	1,395	1,069	163,056	3,560	-
32	\$	86,222	100,176	-	-	6,134	16,019	46,421	830	-
33	Iron oxides..... quantity	-	1,745	31	-	-	-	4,175	100	-
34	\$	-	19,050	480	-	-	-	1,371	24	-
35	Mica..... quantity	-	85	25	-	-	-	8,271	105	-
36	\$	-	1,020	325	-	-	-	2,742	23	-
37	Peat..... quantity	3,696	8	-	-	-	-	81,853	1,594	-
38	\$	33,264	124	-	-	-	-	24,720	319	-
39	Salt..... quantity	16,544	66,199	-	-	23,387	-	9,529	28	-
40	\$	128,975	506,640	-	-	94,785	-	2,164	8	-
41	Talc and soapstone..... quantity	-	-	-	-	-	-	7,385	40	-
42	\$	-	-	-	-	-	-	2,482	8	-
43	Miscellaneous..... quantity	353	10,649	45	-	27,285	25	212,279	2,398	-
44	\$	3,954	101,059	894	-	91,574	374	65,693	487	-
45	Total..... quantity	29,062	129,487	22,902	-	52,067	1,244	830,759	136,005	-
46	\$	262,541	1,150,048	235,178	-	192,493	18,493	256,450	22,439	-
STRUCTURAL MATERIALS AND CLAY PRODUCTS										
47	Cement..... quantity	188,457	371,649	-	-	-	-	210,630	13,490	-
48	\$	1,485,039	3,130,050	-	-	-	-	56,024	2,640	-
49	Clay products..... quantity	47,538	121,513	4,343	14	7,172	2,013	326,175	10,689	-
50	\$	478,670	1,239,071	41,447	250	6,391	27,731	97,663	2,472	-
51	Lime..... quantity	15,948	155,427	594	1,357	5,891	21,453	145,358	45	-
52	\$	146,192	1,416,439	6,300	10,444	28,640	289,721	45,839	10	-
53	Sand and gravel..... quantity	2,741	12,163	34	-	-	-	936,774	4,010	-
54	\$	30,338	117,542	538	-	-	-	268,431	861	-
55	Stone..... quantity	5,592	9,916	308	3	-	81	931,717	6,131	-
56	\$	69,964	97,400	3,575	45	-	1,186	279,228	1,346	-
57	Total..... quantity	260,276	670,868	5,279	1,374	13,063	23,547	2,550,654	34,365	-
58	\$	2,210,203	6,000,502	51,860	10,739	35,031	318,538	747,185	7,329	-
59	Grand total..... quantity	1,025,027	1,517,851	34,726	1,813	152,594	294,588	5,804,947	412,621	1,101,077
60	\$	6,571,031	13,734,941	380,021	16,776	561,555	4,006,594	1,904,272	72,483	26,976

in the Mineral Industry, by Kinds and Industries, 1947

Fuel oil and Diesel oil	Wood	Gas		Other fuel	Electricity purchased	Total	Electricity generated for own use	Electricity generated for sale	Process supplies	No.
		Manu- factured	Natural							
imp. gal.	cords	M cu. ft.	M cu. ft.	\$	K.W.H.	\$	K.W.H.	K.W.H.	\$	
185,554	1,594	-	-	-	-	-	28,355,800	5,934,500	-	1
78,275	26,881	-	-	48	-	139,596	-	29,212	78,881	2
4,200,670	42,066	3,751	-	-	831,954,225	-	55,365,580	7,729,982	-	3
867,396	368,642	99	-	367	4,722,317	7,129,659	-	50,483	17,850,966	4
1,387,825	1,247	-	-	-	252,360,554	-	92,469,115	943,713	-	5
191,520	8,530	-	-	696	616,414	1,361,890	-	14,298	4,663,138	6
128,681	94	-	-	-	1,380,740	-	991,554	-	-	7
26,028	1,065	-	-	4,143	12,054	62,148	-	-	25,238	8
703,790	2,013	-	-	-	77,722,928	-	24,970,993	-	-	9
159,686	21,778	-	-	8	475,285	1,029,361	-	-	3,050,704	10
1,337,586	3,058	-	-	-	165,726,517	-	-	-	-	11
168,243	25,186	-	-	-	561,478	982,647	-	-	7,302,064	12
1,225,775	1,874	-	-	-	105,593,897	-	-	-	-	13
220,043	14,046	-	-	-	466,019	892,619	-	-	619,760	14
35,944,140	1,674	6,621	439	-	7,503,152,976	-	552,604,279	6,591,796	-	15
2,863,671	24,830	6,279	374	-	14,895,205	28,967,359	-	18,868	25,068,894	16
45,114,021	53,620	10,372	439	-	8,937,891,837	-	754,757,321	21,199,991	-	17
4,574,862	490,958	6,378	374	5,262	21,748,772	40,565,279	-	112,861	58,659,635	18
386,596	24	-	-	-	167,080,863	-	53,353,731	18,310,807	-	19
77,767	387	-	-	-	2,044,672	4,050,417	-	229,925	7,651,083	20
60,654	2	-	581,982	-	54,415	-	851,080	-	-	21
9,658	10	-	194,271	-	1,176	220,344	-	-	19,975	22
125,255	1,259	-	3,686,847	-	3,010,976	-	8,400	-	-	23
19,443	5,721	-	619,512	-	40,932	759,635	-	-	116,957	24
572,505	1,285	-	4,268,829	-	170,146,254	-	54,213,211	18,310,807	-	25
106,868	6,118	-	813,783	-	2,086,780	5,030,396	-	229,925	7,788,015	26
189,877	-	-	-	-	169,720,467	-	-	-	-	27
40,470	-	-	-	-	1,290,731	2,031,045	-	-	2,650,382	28
475,986	139	-	-	-	5,732,275	-	2,483,025	-	-	29
65,090	726	-	-	-	55,913	221,166	-	-	376,570	30
311,916	93	-	-	-	7,429,113	-	4,249,878	-	-	31
35,816	670	-	-	-	70,803	383,091	-	-	638,630	32
915	39	-	-	-	222,480	-	-	-	-	33
168	598	-	-	-	3,111	24,802	-	-	6,628	34
22,213	107	-	-	-	2,366,553	-	4,800	-	-	35
2,951	811	-	-	-	11,737	19,609	-	-	8,986	36
8,105	114	-	-	-	2,790,165	-	17,050	-	-	37
1,377	1,129	-	-	-	30,517	91,450	-	-	52,826	38
22,071	-	-	53	-	5,290,826	-	10,136,427	-	-	39
2,469	-	-	33	-	36,842	771,916	-	-	171,821	40
10,800	-	-	-	-	1,442,143	-	186,500	-	-	41
1,413	-	-	-	-	18,883	22,786	-	-	18,904	42
6,753,857	128	307,223	-	-	14,525,767	-	5,227,756	-	-	43
519,659	758	33,179	-	-	135,887	953,518	-	-	629,180	44
7,795,740	620	307,223	53	-	209,519,789	-	22,305,436	-	-	45
669,413	4,692	33,179	33	-	1,654,424	4,499,383	-	-	4,553,927	46
325,534	39	-	-	-	220,989,496	-	724,861	-	-	47
43,628	273	-	-	-	1,060,263	5,777,917	-	-	2,741,555	48
4,401,854	28,194	14,667	1,916,011	-	23,143,528	-	1,239,969	-	-	49
400,692	197,956	7,115	53,364	2,755	276,839	2,832,416	-	-	386,840	50
1,506,411	32,019	639,400	-	-	18,886,679	-	3,916,400	-	-	51
104,727	239,434	88,851	-	23,760	112,787	2,513,144	-	-	266,119	52
1,172,944	33	-	3,966	-	10,973,809	-	7,000	-	-	53
129,850	330	-	1,086	-	137,509	686,485	-	-	126,542	54
542,319	846	-	-	-	31,359,139	-	869,811	-	-	55
92,710	6,279	-	-	-	437,675	989,408	-	-	1,266,522	56
7,949,062	61,131	654,067	1,919,977	-	305,352,651	-	6,758,041	-	-	57
771,607	444,272	95,966	54,450	26,515	2,025,073	12,799,370	-	-	4,787,578	58
61,431,328	116,656	971,662	6,189,298	-	9,622,910,531	-	838,034,009	39,510,798	-	59
6,122,750	946,040	135,523	868,640	31,777	27,515,049	62,894,428	-	342,786	75,789,155	60

TABLE 32. Fuel and Electricity Used for All Purposes

No.	Industry	Bituminous		Anthracite coal		Lignite coal	Coke	Gasoline	Kerosene	Charcoal
		Canadian	Imported	From United States	From other countries					
		tons	tons	tons	tons	tons	tons	imp. gal.	imp. gal.	lb.
METAL MINING										
1	Alluvial gold..... quantity	-	15	-	-	-	2	74,120	854	-
2	\$	-	1,550	-	-	-	253	38,248	705	-
3	Auriferous quartz..... quantity	5,183	49,730	2,990	12	1,020	21	539,487	16,394	18,210
4	\$	87,139	696,827	52,654	314	12,460	505	218,474	4,975	654
5	Copper-gold-silver..... quantity	29,736	2,009	150	-	65,748	75	148,127	6,899	-
6	\$	240,079	32,714	3,261	-	312,181	1,359	59,825	2,198	-
7	Silver-cobalt..... quantity	40	519	22	-	-	2	7,189	95	-
8	\$	720	8,564	888	-	-	35	2,966	28	-
9	Silver-lead-zinc..... quantity	48,818	3,312	24	-	12	11	183,931	6,112	-
10	\$	371,059	48,141	619	-	96	100	78,090	2,188	-
11	Nickel-copper..... quantity	202	16,428	132	-	-	86	90,927	2,848	-
12	\$	2,935	165,469	2,302	-	-	1,400	29,281	832	-
13	Miscellaneous metals.... quantity	1,176	3,838	-	-	-	-	147,797	3,175	-
14	\$	14,908	50,206	-	-	-	-	44,184	1,294	-
15	Non-ferrous smelting and quantity	334,255	838,590	-	-	-	273,120	493,530	20,357	552,766
16	refining. \$	3,368,069	6,966,345	-	-	-	4,186,922	168,123	5,197	16,476
17	Total..... quantity	419,410	914,441	3,318	12	66,780	273,317	1,685,108	56,734	570,976
18	\$	4,084,909	7,969,816	59,724	314	324,737	4,190,574	639,191	17,417	17,130
NON-METAL MINING FUELS										
19	Coal..... quantity	521,497	-	-	-	22,789	-	873,238	4,085	-
20	\$	3,017,051	-	-	-	28,094	-	283,154	1,195	-
21	Natural gas..... quantity	-	3	-	-	-	-	19,764	-	-
22	\$	-	50	-	-	-	-	4,151	-	-
23	Petroleum..... quantity	230	3	-	-	-	-	196,957	2,038	-
24	\$	2,119	45	-	-	-	-	63,656	500	-
25	Total..... quantity	521,727	6	-	-	22,789	-	1,089,939	6,123	-
26	\$	3,019,170	95	-	-	28,094	-	350,961	1,693	-
OTHER NON-METAL MINING										
27	Asbestos..... quantity	3,937	30,733	22,557	-	-	-	224,120	9,225	-
28	\$	44,108	364,490	237,240	-	-	-	79,865	2,178	-
29	Feldspar, nepheline sye- quantity	933	3,616	16	-	-	-	117,234	801	-
30	nite and quartz. \$	11,891	37,611	355	-	-	-	39,372	192	-
31	Gypsum..... quantity	9,405	5,312	121	-	1,521	1,090	174,963	1,786	-
32	\$	112,229	58,283	1,830	-	9,180	18,863	49,245	413	-
33	Iron oxides..... quantity	-	1,277	16	7	-	-	5,900	100	-
34	\$	-	19,477	259	140	-	-	2,200	28	-
35	Mica..... quantity	-	87	39	-	-	-	15,843	52	-
36	\$	-	1,180	738	-	-	-	5,592	15	-
37	Peat..... quantity	4,696	-	-	-	-	-	98,005	1,422	-
38	\$	42,302	-	-	-	-	-	29,958	266	-
39	Salt..... quantity	18,402	59,269	-	-	21,835	-	9,174	18	-
40	\$	161,714	541,862	-	-	86,675	-	2,450	5	-
41	Talc and soapstone..... quantity	-	-	-	-	-	-	7,249	50	-
42	\$	-	-	-	-	-	-	2,665	10	-
43	Miscellaneous..... quantity	1,169	11,959	49	-	29,818	7	200,769	2,351	-
44	\$	13,200	136,513	1,119	-	111,185	115	66,992	586	-
45	Total..... quantity	38,542	112,253	22,798	7	53,174	1,097	853,257	15,805	-
46	\$	383,444	1,159,416	241,541	140	207,040	18,978	278,339	3,693	-
STRUCTURAL MATERIALS AND CLAY PRODUCTS										
47	Cement..... quantity	328,422	300,191	-	-	-	-	189,902	10,479	-
48	\$	2,965,986	2,842,549	-	-	-	-	56,938	2,504	-
49	Clay products..... quantity	46,636	162,406	1,468	5	8,364	1,801	414,294	10,309	-
50	\$	490,344	1,906,269	20,425	114	5,653	30,560	137,539	2,569	-
51	Lime..... quantity	18,809	161,566	1,415	693	2,570	28,918	175,726	929	-
52	\$	199,442	1,738,984	16,814	7,528	12,205	467,451	57,360	252	-
53	Sand and gravel..... quantity	2,955	12,154	6	-	20	17	1,138,913	7,844	-
54	\$	35,171	142,594	117	-	300	259	366,494	1,894	-
55	Stone..... quantity	4,068	8,112	293	4	-	100	1,100,654	7,056	-
56	\$	53,184	91,799	3,424	60	-	1,625	362,031	1,810	-
57	Total..... quantity	400,890	644,429	3,182	702	10,954	30,836	3,019,489	36,617	-
58	\$	3,744,127	6,722,195	40,780	7,702	18,138	499,895	980,362	9,029	-
59	Grand total..... quantity	1,380,569	1,671,129	29,298	721	153,697	305,250	6,647,813	115,279	570,976
60	\$	11,233,650	15,851,522	342,045	8,156	578,029	4,709,447	2,248,853	31,834	17,130

in the Mineral Industry, by Kinds and Industries, 1948

Fuel oil and Diesel oil	Wood	Gas		Other fuel	Electricity purchased	Total	Electricity generated for own use	Electricity generated for sale	Process supplies	No.
		Manu- factured	Natural							
imp. gal	cords	M cu. ft.	M cu. ft.	\$	K.W.H.	\$	K.W.H.	K.W.H.	\$	
415,055	1,426	-	-	-	-	-	22,868,900	6,486,300	-	1
125,036	26,970	-	-	15	-	192,777	-	31,431	262,291	2
3,892,977	39,168	-	-	-	825,055,517	-	40,859,152	9,848,980	-	3
840,026	350,315	-	-	1,876	4,716,012	6,982,231	-	51,593	19,536,566	4
1,738,736	658	-	-	-	276,028,446	-	106,727,102	658,572	-	5
264,411	5,563	-	-	-	785,283	1,706,874	-	10,366	4,044,116	6
115,113	-	-	-	-	1,575,000	-	1,384,500	-	-	7
26,947	-	-	-	45,641	14,990	100,779	-	-	46,048	8
1,269,418	1,946	-	-	-	87,587,160	-	32,925,977	-	-	9
299,705	32,929	-	-	-	621,770	1,454,697	-	-	4,031,193	10
1,713,209	2,683	-	-	-	155,375,156	-	338,400	889,138	-	11
262,833	32,570	-	-	-	531,009	1,028,631	-	4,321	4,948,109	12
1,426,804	2,505	-	-	-	108,977,610	-	2,650	-	-	13
308,639	22,538	-	-	-	448,593	890,362	-	-	1,303,681	14
39,498,860	1,932	5,272	290	-	8,176,142,367	-	684,890,928	10,286,760	-	15
4,104,326	34,084	5,208	290	-	17,433,347	36,288,387	-	35,598	31,037,029	16
50,070,172	50,318	5,272	290	-	9,630,741,256	-	-	28,169,750	-	17
6,231,923	504,969	5,208	290	47,532	24,551,004	48,644,738	889,997,609	133,309	65,209,033	18
960,306	107	14,640	1,559	-	196,704,534	-	54,008,967	23,068,926	-	19
205,937	415	7,320	108	31	2,309,398	5,852,703	-	275,872	10,373,618	20
74,839	-	-	338,589	-	58,316	-	941,400	-	-	21
12,112	-	-	45,093	-	1,174	62,580	-	-	4,485	22
159,345	65	-	7,578,002	-	2,954,408	-	9,075	-	-	23
33,128	355	-	1,788,414	-	51,639	1,939,856	-	-	112,952	24
1,194,490	172	14,640	7,918,150	-	199,717,258	-	54,959,442	23,068,926	-	25
251,177	770	7,320	1,833,615	31	2,362,211	7,855,139	-	275,872	10,491,055	26
320,298	72	-	-	-	175,679,821	-	-	-	-	27
75,879	520	-	-	-	1,281,393	2,085,673	-	-	3,068,607	28
320,869	301	-	-	-	5,681,748	-	1,111,310	-	-	29
58,630	1,760	-	-	11	64,758	214,580	-	-	340,733	30
847,854	87	-	520	-	9,960,232	-	1,447,400	-	-	31
115,212	632	-	260	-	115,245	481,392	-	-	1,295,840	32
765	27	-	-	-	225,805	-	-	-	-	33
138	514	-	-	-	2,818	25,574	-	-	4,625	34
5,960	142	-	-	-	590,268	-	-	-	-	35
1,904	1,054	-	-	-	4,139	14,622	-	-	18,228	36
8,438	222	61	-	-	3,067,057	-	14,050	-	-	37
2,106	2,102	49	-	-	34,894	111,677	-	-	59,297	38
4,717	-	-	88,631	-	3,786,187	-	12,524,924	-	-	39
843	-	-	2,659	-	25,858	822,066	-	-	248,177	40
1,385	10	-	-	-	1,420,220	-	-	-	-	41
375	120	-	-	-	17,183	20,353	-	-	8,897	42
6,634,989	505	233,852	-	-	16,223,479	-	6,304,548	-	-	43
549,000	2,780	29,454	-	-	170,203	1,081,147	-	-	689,908	44
8,145,275	1,366	233,913	89,151	-	216,634,817	-	21,402,232	-	-	45
804,087	9,482	29,503	2,919	11	1,716,491	4,857,084	-	-	5,734,312	46
483,477	23	-	-	-	251,820,532	-	821,323	-	-	47
90,831	115	-	-	-	1,199,233	7,158,156	-	-	3,402,312	48
1,781,612	33,267	30,650	1,565,850	-	22,641,392	-	387,574	-	-	49
224,854	311,964	14,400	47,632	2,060	287,030	3,481,413	-	-	545,190	50
1,769,459	30,990	622,200	-	-	18,188,661	-	3,582,780	-	-	51
161,084	223,341	101,554	-	22,852	108,800	3,117,667	-	-	252,757	52
1,415,037	134	600	7,001	-	8,578,573	-	950,000	-	-	53
190,318	1,185	123	1,714	-	110,871	851,040	-	-	249,984	54
694,368	806	-	-	-	33,762,369	-	628,615	-	-	55
139,393	5,701	-	-	-	482,181	1,141,208	-	-	1,476,455	56
6,143,953	65,220	653,450	1,572,851	-	334,991,517	-	6,370,292	-	-	57
806,480	542,306	116,077	49,346	24,912	2,188,115	15,749,484	-	-	5,926,698	58
65,533,890	117,076	907,275	9,580,442	-	10,382,084,858	-	972,729,575	51,238,676	-	59
8,093,667	1,057,327	158,108	1,886,170	72,486	30,817,821	77,106,445	-	-	87,361,098	60

TABLE 33. Fuel and Electricity Used for All Purposes

No.	Province	Bituminous		Anthracite coal		Lignite coal	Coke	Gasoline	Kerosene	Charcoal
		Canadian	Imported	From United States	From other countries					
		tons	tons	tons	tons	tons	tons	imp. gal.	imp. gal.	lb.
1	Nova Scotia..... quantity	258,291	6,054	-	-	-	28	316,763	3,036	-
2	\$	1,184,782	85,939	-	-	-	366	87,962	709	-
3	New Brunswick..... quantity	18,489	6,248	-	-	-	-	112,731	5,684	-
4	\$	169,008	82,700	-	-	-	-	28,302	1,147	-
5	Quebec..... quantity	108,812	433,176	26,678	1,790	-	3,313	1,582,249	50,628	43,100
6	\$	1,080,412	4,229,860	285,218	16,095	-	47,150	599,849	11,874	1,105
7	Ontario..... quantity	2,645	1,070,076	8,040	-	-	226,016	1,951,084	149,723	1,050,925
8	\$	30,327	9,312,762	94,413	-	-	3,162,019	576,676	26,290	25,142
9	Manitoba..... quantity	89,521	2,150	-	-	30,773	1,035	190,192	2,265	-
10	\$	874,304	20,907	-	-	130,059	16,547	72,457	820	-
11	Saskatchewan..... quantity	61,626	45	-	-	58,986	63	245,310	4,846	-
12	\$	581,576	986	-	-	124,804	1,041	89,872	1,539	-
13	Alberta..... quantity	226,982	-	-	-	-	-	676,450	6,702	-
14	\$	908,510	-	-	-	-	-	205,265	1,875	-
15	British Columbia..... quantity	258,646	102	8	23	62,835	64,133	624,037	188,520	6,322
16	\$	1,740,658	1,787	390	681	306,692	779,471	182,313	27,930	355
17	Yukon..... quantity	14	-	-	-	-	-	60,277	1,028	-
18	\$	1,314	-	-	-	-	-	35,997	666	-
19	Northwest Territories.... quantity	1	-	-	-	-	-	45,854	189	730
20	\$	140	-	-	-	-	-	25,579	133	374
21	Canada..... quantity	1,025,027	1,517,851	34,726	1,813	152,594	294,588	5,804,947	412,621	1,101,077
22	\$	6,571,031	13,734,941	380,021	16,776	561,553	4,006,594	1,904,272	72,483	26,976

TABLE 34. Fuel and Electricity Used Only for Metallurgical

No.	Province	Bituminous coal		Anthracite coal		Lignite coal	Coke	Charcoal
		Canadian	Imported	From United States	From other countries			
		tons	tons	tons	tons	tons	tons	lb.
1	Quebec..... quantity	58,572	50,524	-	-	-	1,378	43,100
2	\$	575,449	495,045	-	-	-	20,191	1,105
3	Ontario..... quantity	-	550,129	-	-	-	202,865	1,045,925
4	\$	-	4,780,787	-	-	-	2,848,586	24,977
5	Manitoba..... quantity	14,175	-	-	-	-	7	-
6	\$	136,055	-	-	-	-	114	-
7	Saskatchewan..... quantity	54,061	-	-	-	-	16	-
8	\$	517,991	-	-	-	-	265	-
9	British Columbia..... quantity	87,589	-	-	-	-	63,746	6,322
10	\$	591,983	-	-	-	-	775,356	355
11	Canada..... quantity	214,397	600,653	-	-	-	268,012	1,095,347
12	\$	1,821,478	5,275,832	-	-	-	3,641,512	26,437

All used in the non-ferrous smelting and refining industry and included in Table 33.

in the Mineral Industry by Provinces, 1947

Fuel oil and Diesel oil	Wood	Gas		Other fuel	Electricity purchased	Total	Electricity generated for own use	Electricity generated for sale	Process supplies	No.
		Manu- factured	Natural							
imp. gal.	cords	M cu. ft.	M cu. ft.	\$	K.W.H.	\$	K.W.H.	K.W.H.	\$	
323,324	183	183,803	-	-	99,704,390	-	22,718,919	11,119,430	-	1
37,349	822	23,922	-	-	1,257,616	2,679,467	-	111,194	4,292,156	2
117,369	12,458	-	22,763	-	4,009,140	-	1,550,878	-	-	3
15,929	81,118	-	9,419	-	74,174	461,797	-	-	200,665	4
28,314,854	35,430	649,772	-	-	7,080,042,769	-	27,182,095	6,591,796	-	5
2,613,618	294,749	95,229	-	939	16,522,331	25,797,929	-	18,868	22,617,565	6
20,337,216	37,575	138,087	259,011	-	1,659,723,292	-	29,608,297	-	-	7
1,860,066	286,931	16,372	153,284	4,143	6,742,800	22,291,225	-	-	29,707,694	8
542,733	12,170	-	-	-	162,762,833	-	2,109,091	-	-	9
80,164	100,402	-	-	-	494,282	1,789,942	-	-	1,707,121	10
4,076,239	131	-	-	-	325,097,104	-	2,671,679	-	-	11
284,090	916	-	-	-	379,178	1,464,002	-	-	1,993,920	12
485,871	1,325	-	5,907,524	-	66,920,008	-	22,507,181	487,459	-	13
84,130	6,288	-	705,937	-	724,438	2,636,443	-	39,896	3,654,250	14
5,891,344	10,335	-	-	-	218,981,935	-	684,845,901	8,020,848	-	15
735,355	71,746	-	-	26,695	1,236,398	5,110,471	-	108,225	11,071,978	16
325,318	2,703	-	-	-	-	-	29,519,800	5,934,500	-	17
144,858	44,924	-	-	-	-	227,759	-	29,212	181,811	18
1,017,060	4,346	-	-	-	5,669,060	-	15,320,168	7,356,765	-	19
267,191	58,144	-	-	-	83,832	435,393	-	35,391	361,995	20
61,431,328	116,656	971,662	6,189,298	-	9,622,910,531	-	838,034,009	39,510,798	-	21
6,122,750	946,040	135,523	868,640	31,777	27,515,049	62,894,428	-	342,786	75,789,155	22

Purposes in the Mineral Industry by Provinces, 1947

Gasoline	Kerosene	Fuel oil and Diesel oil	Wood	Gas		Other	Electricity	Total	Electricity generated for own use	No.
				Manu- factured	Natural					
imp. gal.	imp. gal.	imp. gal.	cords	M cu. ft.	M cu. ft.	\$	K.W.H.	\$	K.W.H.	
7,888	1,202	18,642,733	491	6,621	-	-	6,247,454,225	-	-	1
2,773	363	1,456,467	13,256	6,279	-	-	11,912,169	14,483,097	-	2
43,968	4,687	15,049,039	220	-	439	-	226,301,509	-	-	3
9,745	1,041	1,092,917	1,942	-	374	-	702,207	9,462,576	-	4
-	-	13,804	31	-	-	-	56,998,500	-	-	5
-	-	2,857	218	-	-	-	50,190	189,434	-	6
-	-	32,209	125	-	-	-	132,996,500	-	-	7
-	-	6,668	874	-	-	-	117,109	642,907	-	8
103,898	2,385	1,882,434	807	-	-	-	80,993,671	-	538,773,525	9
33,005	715	262,615	8,540	-	-	-	204,509	1,877,078	-	10
155,754	8,274	35,620,219	1,674	6,621	439	-	6,744,744,405	-	538,773,525	11
45,523	2,119	2,821,524	24,830	6,279	374	-	12,986,184	26,655,092	-	12

All used in the non-ferrous smelting and refining industry and included in Table 33.

TABLE 35. Fuel and Electricity Used for All Purposes

No.	Province	Bituminous		Anthracite coal		Lignite coal	Coke	Gasoline	Kerosene	Charcoal
		Canadian	Imported	From United States	From other countries					
		tons	tons	tons	tons	tons	tons	imp. gal.	imp. gal.	lb.
1	Nova Scotia..... quantity	356,811	-	-	-	-	12	328,004	1,704	-
2	\$	2,556,587	-	-	-	-	184	90,213	377	-
3	New Brunswick..... quantity	24,814	-	-	-	-	-	241,014	3,521	-
4	\$	239,180	-	-	-	-	-	59,208	793	-
5	Quebec quantity	336,672	408,733	27,722	709	-	5,088	1,694,435	41,476	51,200
6	\$	3,580,314	4,588,709	308,396	7,842	-	87,571	606,659	10,628	1,525*
7	Ontario..... quantity	2,331	1,247,773	1,442	-	20	236,061	2,204,227	32,831	512,898
8	\$	28,956	11,085,002	31,201	-	300	3,662,737	730,583	8,368	14,885
9	Manitoba quantity	103,334	5,894	121	-	25,926	819	188,673	1,761	-
10	\$	1,143,811	64,716	1,830	-	108,060	14,419	74,543	690	-
11	Saskatchewan..... quantity	46,269	1,309	-	-	60,971	56	294,862	4,468	-
12	\$	507,298	9,729	-	-	144,932	1,012	105,046	1,494	-
13	Alberta..... quantity	242,197	-	-	-	-	-	662,921	8,148	-
14	\$	1,175,073	-	-	-	-	-	223,809	2,349	-
15	British Columbia..... quantity	267,396	7,405	13	12	66,780	63,212	912,682	19,122	6,148
16	\$	1,985,668	101,816	618	314	324,737	943,271	293,089	5,593	346
17	Yukon..... quantity	745	15	-	-	-	2	78,450	1,266	-
18	\$	16,763	1,550	-	-	-	253	45,244	944	-
19	Northwest Territories... quantity	-	-	-	-	-	-	42,545	982	730
20	\$	-	-	-	-	-	-	20,459	598	374
21	Canada..... quantity	1,380,569	1,671,129	29,298	721	153,697	305,250	6,647,813	115,279	570,976
22	\$	11,233,650	15,851,522	342,045	8,156	578,029	4,709,447	2,248,853	31,834	17,130

TABLE 36. Fuel and Electricity Used Only for Metallurgical

No.	Province	Bituminous coal		Anthracite coal		Lignite coal	Coke	Charcoal
		Canadian	Imported	From United States	From other countries			
		tons	tons	tons	tons	tons	tons	lb.
1	Quebec..... quantity	175,015	82,247	-	-	-	1,939	51,200
2	\$	1,939,045	851,903	-	-	-	35,298	1,525
3	Ontario quantity	-	724,074	-	-	-	205,539	467,418
4	\$	-	5,802,302	-	-	-	3,170,675	13,827
5	Manitoba..... quantity	24,456	-	-	-	-	-	-
6	\$	270,729	-	-	-	-	-	-
7	Saskatchewan..... quantity	40,350	-	-	-	-	-	-
8	\$	446,673	-	-	-	-	-	-
9	British Columbia..... quantity	88,478	-	-	-	-	63,200	6,148
10	\$	644,683	-	-	-	-	943,102	346
11	Canada..... quantity	328,299	806,321	-	-	-	270,678	524,766
12	\$	3,301,130	6,654,205	-	-	-	4,149,075	15,698

All used in the non-ferrous smelting and refining industry and included in table.

in the Mineral Industry by Provinces, 1948

Fuel oil and Diesel oil	Wood	Gas		Other fuel	Electricity purchased	Total	Electricity generated for own use	Electricity generated for sale	Process supplies	No.
		Manu- factured	Natural							
imp. gal.	cords	M cu. ft.	M cu. ft.	\$	K.W.H.	\$	K.W.H.	K.W.H.	\$	
819,063	688	109,832	-	-	129,126,176	-	25,829,402	16,021,045	-	1
120,062	3,147	20,152	-	-	1,541,334	4,332,056	-	160,210	6,917,817	2
407,045	12,275	-	16,335	-	4,839,937	-	1,000	-	-	3
71,551	81,051	-	6,958	-	86,014	544,755	-	-	453,891	4
27,172,023	33,724	627,472	-	-	7,739,029,311	-	29,744,603	10,286,760	-	5
3,235,999	322,247	106,762	-	17	18,723,230	31,579,899	-	35,598	32,018,439	6
21,366,569	37,933	155,331	9,125	-	1,686,665,732	-	24,631,747	889,138	-	7
2,469,972	309,974	23,874	4,820	47,511	7,002,208	25,420,391	-	4,321	31,032,141	8
603,882	12,635	-	-	-	205,014,539	-	3,207,835	-	-	9
113,535	115,452	-	-	-	626,455	2,263,511	-	-	1,647,233	10
5,269,999	101	-	-	-	292,146,642	-	2,753,147	-	-	11
403,405	704	-	-	-	487,254	1,660,874	-	-	813,100	12
745,007	267	-	9,404,982	-	77,615,685	-	22,159,682	497,976	-	13
156,311	1,574	-	1,859,392	31	803,855	4,222,394	-	39,508	4,303,321	14
7,242,082	11,772	14,640	-	-	238,622,148	-	825,335,900	7,609,757	-	15
1,022,192	89,033	7,320	-	24,927	1,413,352	6,212,276	-	103,279	9,179,382	16
459,238	2,990	-	-	-	-	-	25,024,817	6,486,300	-	17
176,498	55,861	-	-	-	-	297,113	-	31,431	419,178	18
1,468,982	4,691	-	150,000	-	9,024,688	-	14,041,442	9,447,700	-	19
324,142	78,484	-	15,000	-	134,119	573,176	-	34,834	576,596	20
65,553,890	117,076	907,275	9,580,442	-	10,382,084,858	-	972,729,575	51,238,676	-	21
8,093,667	1,057,527	158,108	1,886,170	72,486	30,817,821	77,106,445	-	409,181	87,361,098	22

Purposes in the Mineral Industry by Provinces, 1948

Gasoline	Kerosene	Fuel oil and Diesel oil	Wood	Gas		Other	Electricity	Total	Electricity generated for own use	No.
				Manu- factured	Natural					
imp. gal.	imp. gal.	imp. gal.	cords	M cu. ft.	M cu. ft.	\$	K.W.H.	\$	K.W.H.	
10,027	1,118	22,160,403	591	5,272	-	-	6,793,386,289	-	-	1
3,867	315	2,363,441	17,496	5,208	-	-	13,858,322	19,076,420	-	2
45,334	6,041	15,201,404	631	-	290	-	222,856,086	-	-	3
10,772	1,570	1,411,027	9,357	-	290	-	722,090	11,141,910	-	4
22,121	-	-	60	-	-	-	76,313,900	-	-	5
7,742	-	-	423	-	-	-	96,155	375,049	-	6
32,634	-	-	101	-	-	-	112,580,100	-	-	7
11,422	-	-	704	-	-	-	141,851	600,650	-	8
153,538	2,021	1,844,827	542	-	-	-	88,568,888	-	669,100,088	9
57,404	627	281,104	6,007	-	-	-	227,027	2,160,300	-	10
263,654	9,180	39,206,634	1,925	5,272	290	-	7,293,705,263	-	669,100,088	11
91,207	2,512	4,053,572	33,987	5,208	290	-	15,045,445	33,354,329	-	12

All used in the non-ferrous smelting and refining industry and included in table.

TABLE 37. Power Equipment in Use and Power Equipment in
ORDINARILY IN USE

No.		Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers
METAL MINING											
1	Alluvial gold mines..... No.	—	—	14	17	6	37	—	37	86	—
2	H.P.	—	—	1,515	357	15,650	17,522	—	17,522	3,840	—
3	Auriferous quartz mines... No.	9	1	99	81	17	207	9,878	10,085	793	187
4	H.P.	1,046	40	17,729	3,591	15,482	37,888	270,473	308,361	15,625	14,765
5	Copper-gold-silver No.	—	1	15	3	6	25	2,760	2,785	604	27
6	mines..... H.P.	—	13,400	4,192	285	8,900	26,777	95,769	122,546	18,294	4,217
7	Silver-cobalt mines..... No.	2	—	5	2	—	9	54	63	—	5
8	H.P.	160	—	625	170	—	955	1,255	2,210	—	239
9	Silver-lead-zinc mines.... No.	—	3	28	21	4	56	832	888	363	20
10	H.P.	—	6,000	3,822	900	1,050	11,772	15,273	27,045	7,454	3,136
11	Nickel-copper mines..... No.	—	—	2	10	—	12	933	945	—	7
12	H.P.	—	—	40	80	—	120	43,581	43,701	—	555
13	Miscellaneous metal..... No.	—	—	41	39	—	80	361	441	—	10
14	H.P.	—	—	5,995	921	—	6,916	14,839	21,755	—	506
15	Non-ferrous smelting..... No.	20	10	14	20	—	64	10,742	10,806	430	51
16	and refining..... H.P.	920	9,420	4,139	2,425	—	16,904	257,155	274,059	6,351	36,554
17	Total..... No.	31	15	218	193	33	490	25,560	26,050	2,276	307
18	H.P.	2,126	28,860	38,057	8,729	41,062	178,854	698,345	817,199	51,564	59,972
NON-METAL MINING, INCLUDING FUELS											
19	Coal..... No.	105	10	47	263	2	427	3,687	4,114	420	173
20	H.P.	31,420	17,999	4,133	6,353	12,000	71,905	128,893	200,798	21,017	44,787
21	Natural gas..... No.	4	—	1	256	—	261	1,081	1,342	—	9
22	H.P.	140	—	335	10,016	—	10,491	1,642	12,133	—	360
23	Petroleum..... No.	20	10	11	178	—	219	207	426	5	72
24	H.P.	3,606	1,239	1,103	4,591	—	10,539	1,910	12,449	5	5,249
25	Total..... No.	129	20	59	697	2	907	4,975	5,882	425	254
26	H.P.	35,166	19,238	5,571	20,960	12,000	92,935	132,445	225,380	21,022	50,396
OTHER NON-METAL MINING											
27	Asbestos..... No.	—	—	4	11	—	15	1,752	1,767	—	9
28	H.P.	—	—	394	1,058	—	1,452	74,120	75,572	—	495
29	Feldspar, nepheline..... No.	9	—	21	34	—	64	187	251	123	8
30	syenite and quartz..... H.P.	543	—	2,412	1,620	—	4,575	3,310	7,885	1,201	745
31	Gypsum..... No.	4	—	57	38	—	99	172	271	41	3
32	H.P.	1,140	—	7,625	2,113	—	10,878	6,222	17,100	1,395	450
33	Iron oxides..... No.	—	—	1	1	—	2	20	22	—	—
34	H.P.	—	—	100	100	—	200	125	325	—	—
35	Mica..... No.	2	—	1	9	—	12	21	33	1	2
36	H.P.	75	—	315	250	—	640	348	988	7	70
37	Peat..... No.	—	—	2	112	2	116	128	244	3	3
38	H.P.	—	—	141	3,987	55	4,183	1,670	5,853	7	322
39	Salt..... No.	13	16	—	—	—	29	207	236	347	10
40	H.P.	1,315	2,745	—	—	—	4,060	1,039	5,099	3,461	3,973
41	Talc and soapstone..... No.	—	—	3	8	—	11	65	76	12	—
42	H.P.	—	—	274	114	—	388	910	1,298	122	—
43	Miscellaneous..... No.	2	—	24	21	2	49	446	495	109	18
44	H.P.	20	—	2,385	1,204	650	4,259	8,163	12,422	1,505	773
45	Total..... No.	30	16	113	234	4	397	2,998	3,395	636	53
46	H.P.	3,093	2,745	13,646	10,446	705	30,635	95,907	126,542	7,698	6,828
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS											
47	Cement..... No.	4	—	15	38	—	57	1,542	1,599	24	1
48	H.P.	400	—	2,839	1,076	—	4,315	80,066	84,381	1,008	15
49	Clay products..... No.	43	—	15	90	18	166	682	848	30	48
50	H.P.	3,955	—	1,134	2,838	787	8,714	15,003	23,717	233	4,959
51	Lime..... No.	5	—	10	15	5	35	486	521	60	11
52	H.P.	130	—	1,545	318	85	2,078	7,378	9,456	915	1,398
53	Sand and gravel..... No.	18	—	44	104	7	173	318	491	10	6
54	H.P.	869	—	3,348	4,754	240	9,211	7,305	16,516	185	412
55	Stone..... No.	31	—	87	192	8	318	1,105	1,423	38	43
56	H.P.	1,656	—	7,868	7,358	680	17,562	27,385	44,947	1,131	1,850
57	Total..... No.	101	—	171	439	38	749	4,133	4,882	162	109
58	H.P.	7,010	—	16,734	16,344	1,792	41,880	137,137	179,017	3,472	8,634
59	Grand Total 1947..... No.	291	51	561	1,563	77	2,543	37,666	40,209	3,499	723
60	H.P.	47,395	50,843	74,008	56,479	55,579	284,304	1,063,834	1,348,138	83,756	125,830
61	Grand Total 1946..... No.	320	52	420	1,423	77	2,292	32,653	34,945	3,537	736
62	H.P.	47,653	50,199	57,686	51,550	54,002	261,090	1,003,315	1,264,405	82,771	122,887

Reserve or Idle, in the Mineral Industry, by Industries, 1947

IN RESERVE OR IDLE

Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers	Motor generator sets in use and in reserve total	No.
—	—	5	7	2	14	—	14	264	—	8	1
—	—	185	79	50	314	—	314	1,670	—	234	2
10	1	49	101	1	162	1,447	1,609	253	51	528	3
572	90	7,976	7,822	780	17,240	34,330	51,570	6,380	3,190	17,074	4
—	3	3	2	—	8	289	297	50	4	122	5
—	1,000	710	245	—	1,955	10,178	12,133	14,845	951	36,316	6
—	—	—	3	—	3	15	18	—	1	3	7
—	—	—	133	—	133	551	684	—	100	410	8
—	—	11	4	2	17	71	88	36	1	29	9
—	—	1,238	293	200	1,731	1,845	3,576	856	30	2,123	10
2	—	—	4	—	6	95	101	—	5	91	11
255	—	—	80	—	335	4,685	5,020	—	280	34,901	12
—	—	—	3	—	3	6	9	—	—	11	13
—	—	—	24	—	24	1,035	1,059	—	—	170	14
2	8	3	2	—	15	3,207	3,222	63	14	196	15
2,574	11,929	525	200	—	15,228	70,235	85,463	3,192	6,702	126,395	16
14	12	71	126	5	228	5,130	5,358	666	76	988	17
3,401	13,019	10,634	8,876	1,030	39,960	122,859	159,819	26,943	11,253	217,623	18
—	—	—	—	—	—	—	—	—	—	—	—
30	5	2	19	—	56	284	340	18	23	105	19
6,743	3,090	124	485	—	10,442	5,700	16,142	627	4,458	6,799	20
—	—	2	17	—	19	37	56	—	—	8	21
—	—	469	463	—	932	671	1,603	—	—	53	22
15	5	—	24	—	44	28	72	—	3	16	23
1,906	458	—	434	—	2,798	427	3,225	—	200	103	24
45	10	4	60	—	119	349	468	18	26	129	25
8,649	3,548	593	1,382	—	14,172	6,798	20,970	627	4,658	6,955	26
—	—	—	—	—	—	—	—	—	—	—	—
1	—	—	1	—	2	75	77	—	—	19	27
100	—	—	100	—	200	4,790	4,990	—	—	5,000	28
—	—	—	5	—	5	24	29	16	—	22	29
—	—	—	335	—	335	424	759	99	—	855	30
1	—	2	—	—	3	22	25	2	—	2	31
200	—	400	—	—	600	813	1,413	157	—	375	32
—	—	—	—	—	—	12	12	—	—	—	33
—	—	—	—	—	—	11	11	—	—	—	34
3	—	—	1	—	4	2	6	3	1	1	35
115	—	—	3	—	118	30	148	15	40	30	36
—	—	2	12	—	14	1	15	2	—	4	37
—	—	140	424	—	564	3	567	1	—	33	38
—	—	—	1	—	1	5	6	21	5	2	39
—	—	—	15	—	15	65	80	385	785	18	40
—	—	—	—	—	—	4	4	—	—	—	41
—	—	—	—	—	—	320	320	—	—	—	42
2	—	5	5	—	12	58	70	23	3	5	43
60	—	897	580	—	1,537	899	2,436	500	140	130	44
7	—	9	25	—	41	203	244	67	9	55	45
475	—	1,437	1,437	—	3,369	7,355	10,724	1,160	965	6,441	46
—	—	—	—	—	—	—	—	—	—	—	—
1	—	1	7	—	9	370	379	8	1	34	47
50	—	20	447	—	97	16,320	16,837	302	40	2,598	48
2	2	2	13	—	19	64	83	—	8	11	49
195	207	42	312	—	756	1,747	2,503	—	412	313	50
1	—	—	—	—	1	24	25	—	6	1	51
100	—	—	—	—	100	498	598	—	377	37	52
4	—	—	9	—	13	36	49	—	3	—	53
237	—	—	258	—	495	1,021	1,516	—	215	—	54
7	—	4	16	7	34	144	178	—	7	5	55
420	—	315	737	250	1,722	4,949	6,671	—	271	126	56
15	2	7	45	7	76	638	714	8	25	51	57
1,002	207	377	1,754	250	3,590	24,335	28,125	302	1,315	3,074	58
81	24	91	256	12	464	6,320	6,784	759	136	1,223	59
13,527	16,774	13,041	13,469	1,280	58,091	161,547	219,638	29,032	18,191	234,093	60
81	19	80	239	19	438	5,774	6,212	679	118	1,157	61
18,275	15,240	12,610	13,108	43,112	102,345	149,107	251,452	15,802	22,574	199,846	62

TABLE 38. Power Equipment in Use and Power Equipment in ORDINARILY IN USE

No.		Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers
METAL MINING											
1	Alluvial gold mines	No. —	—	28	25	3	56	—	56	155	1
2	H.P. —	—	—	3, 675	708	15, 000	19, 383	—	19, 383	12, 910	15
3	Auriferous quartz mines ...	No. 10	1	69	66	12	158	10, 154	10, 312	735	103
4	H.P. 394	40	13, 589	3, 852	13, 717	31, 592	282, 957	314, 549	14, 441	8, 246	
5	Copper-gold-silver	No. —	1	21	2	6	30	3, 067	3, 097	653	23
6	mines	H.P. —	13, 400	5, 846	225	8, 900	28, 371	106, 372	134, 743	24, 536	4, 017
7	Silver-cobalt mines	No. —	—	7	6	—	13	50	63	50	4
8	H.P. —	—	—	595	110	—	705	1, 230	1, 935	420	170
9	Silver-lead-zinc mines	No. —	3	46	25	11	85	1, 383	1, 468	844	18
10	H.P. —	6, 000	7, 989	903	2, 610	17, 502	26, 438	43, 940	12, 059	3, 066	
11	Nickel-copper mines	No. 2	—	4	4	—	10	979	989	21	3
12	H.P. 155	—	1, 720	29	—	1, 904	45, 564	47, 468	44	270	
13	Miscellaneous metal	No. —	—	57	44	—	101	342	443	—	5
14	mines	H.P. —	—	9, 670	1, 010	—	10, 680	19, 915	30, 595	—	510
15	Non-ferrous smelting	No. 21	9	14	20	—	64	11, 845	11, 909	449	28
16	and refining	H.P. 2, 170	8, 170	4, 414	2, 525	—	17, 279	283, 578	300, 857	6, 446	22, 286
17	Total	No. 33	14	246	192	32	517	27, 820	28, 337	2, 907	185
18	H.P. 2, 719	27, 610	47, 498	9, 362	40, 227	127, 416	766, 054	893, 470	70, 856	38, 580	
NON-METAL MINING, INCLUDING FUELS											
19	Coal	No. 111	7	100	253	2	473	3, 809	4, 282	441	168
20	H.P. 42, 136	7, 799	6, 609	5, 651	12, 000	74, 195	134, 124	208, 319	21, 390	44, 035	
21	Natural gas	No. —	—	3	94	—	97	1, 194	1, 291	—	7
22	H.P. —	—	635	6, 775	—	7, 410	2, 052	9, 462	—	320	
23	Petroleum	No. 17	12	64	470	—	563	376	939	—	122
24	H.P. 2, 716	1, 244	4, 273	11, 653	—	19, 886	2, 627	22, 513	—	9, 832	
25	Total	No. 128	19	167	817	2	1, 133	5, 379	6, 512	441	297
26	H.P. 44, 852	9, 043	11, 517	24, 079	12, 000	101, 491	138, 803	240, 294	21, 390	54, 187	
OTHER NON-METAL MINING											
27	Asbestos	No. —	—	11	25	—	36	1, 807	1, 843	—	5
28	H.P. —	—	1, 231	2, 098	—	3, 329	74, 457	77, 786	—	340	
29	Feldspar, nepheline	No. 8	—	22	41	—	71	178	249	135	6
30	syenite and quartz	H.P. 508	—	2, 822	1, 927	—	5, 257	3, 276	8, 533	1, 289	615
31	Gypsum	No. 1	—	60	35	—	96	240	336	40	—
32	H.P. 200	—	7, 867	1, 815	—	9, 882	7, 013	16, 895	1, 685	—	
33	Iron oxides	No. —	—	1	4	—	5	20	25	—	—
34	H.P. —	—	100	211	—	311	125	436	—	—	
35	Mica	No. 1	—	—	10	—	11	9	20	1	—
36	H.P. 50	—	—	261	—	311	215	526	7	—	
37	Peat	No. —	—	4	121	—	125	158	283	3	2
38	H.P. —	—	292	4, 831	—	5, 123	1, 930	7, 053	9	320	
39	Salt	No. 13	16	—	1	—	30	213	243	325	15
40	H.P. 1, 345	2, 965	—	25	—	4, 335	1, 044	5, 379	3, 859	6, 163	
41	Talc and soapstone	No. —	—	1	3	—	4	71	75	—	—
42	H.P. —	—	35	100	—	135	981	1, 116	—	—	
43	Miscellaneous	No. 4	—	25	18	2	49	585	634	179	12
44	H.P. 116	—	2, 500	903	650	4, 169	8, 778	12, 947	2, 678	688	
45	Total	No. 27	16	124	258	2	427	3, 281	3, 708	683	40
46	H.P. 2, 219	2, 965	14, 847	12, 171	650	32, 852	97, 819	130, 671	8, 527	8, 146	
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS											
47	Cement	No. 4	—	16	44	—	64	1, 644	1, 708	40	1
48	H.P. 400	—	3, 645	1, 168	—	5, 213	82, 325	87, 538	1, 312	15	
49	Clay products	No. 36	—	15	95	18	164	863	1, 027	35	43
50	H.P. 3, 480	—	1, 196	3, 344	787	8, 807	15, 816	24, 623	235	4, 644	
51	Lime	No. 5	—	10	11	5	31	485	516	70	9
52	H.P. 130	—	1, 635	298	85	2, 148	7, 363	9, 511	903	1, 233	
53	Sand and gravel	No. 19	—	61	130	7	217	352	569	38	4
54	H.P. 801	—	4, 357	5, 726	240	11, 124	7, 630	18, 754	686	330	
55	Stone	No. 31	—	102	224	13	370	1, 294	1, 664	42	36
56	H.P. 1, 670	—	9, 607	8, 804	1, 040	21, 121	31, 729	52, 850	1, 259	1, 545	
57	Total	No. 95	—	204	504	43	846	4, 638	5, 484	225	93
58	H.P. 6, 481	—	20, 440	19, 340	2, 152	48, 413	144, 863	193, 276	4, 395	7, 767	
59	Grand total 1948	No. 283	49	741	1, 771	79	2, 923	41, 118	44, 041	4, 256	615
60	H.P. 56, 271	39, 618	94, 302	64, 952	55, 029	310, 172	1, 147, 539	1, 457, 721	248, 368	108, 680	
61	Grand total 1947	No. 291	51	561	1, 563	77	2, 543	37, 666	40, 209	3, 499	723
62	H.P. 47, 395	50, 843	74, 008	56, 479	55, 579	284, 304	1, 063, 834	1, 348, 138	83, 756	125, 830	

Reserve or Idle, in the Mineral Industry, by Industries, 1948

IN RESERVE OR IDLE

Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers	Motor generator sets in use and in reserve Total	No.
1	—	6	3	2	12	1	13	250	—	5	1
20	—	225	11	50	306	1	307	6,000	—	388	2
4	—	42	77	1	124	1,440	1,564	147	32	546	3
330	—	9,485	7,529	780	18,124	49,346	67,470	2,800	2,012	23,385	4
—	3	4	2	—	9	299	308	82	2	127	5
—	10,000	830	245	—	11,075	10,106	21,181	2,264	811	36,335	6
—	—	—	1	—	1	—	1	9	3	7	7
—	—	—	13	—	13	—	13	16	125	16	8
—	—	9	15	2	26	89	115	62	4	59	9
—	—	1,480	685	200	2,365	2,439	4,804	346	97	7,151	10
3	—	3	5	—	11	81	92	54	3	92	11
100	—	398	194	—	692	4,165	4,857	152	155	35,001	12
—	—	—	1	—	1	4	5	—	—	3	13
—	—	—	15	—	15	1,300	1,315	—	—	14	14
5	4	2	2	—	13	3,079	3,092	70	8	30	15
5,089	8,070	175	200	—	13,534	62,735	76,269	2,022	11,720	13,098	16
13	7	66	106	5	197	4,993	5,190	674	52	1,060	17
5,539	18,070	12,593	8,892	1,030	46,124	130,092	176,216	13,600	14,920	203,456	18
28	3	7	27	—	65	354	419	9	28	104	19
6,196	3,005	729	810	—	10,740	7,501	18,241	373	4,388	7,030	20
4	—	2	10	—	16	20	36	—	—	5	21
140	—	469	1,514	—	2,123	470	2,593	—	—	75	22
7	7	1	44	—	59	30	89	—	2	71	23
1,496	504	500	1,427	—	3,927	187	4,114	—	67	1,061	24
39	10	10	81	—	140	404	544	9	30	180	25
7,832	3,509	1,698	3,751	—	16,790	8,158	24,948	373	4,455	8,166	26
1	—	—	1	—	2	78	80	—	—	3	27
100	—	—	100	—	200	3,870	4,070	—	—	335	28
—	—	—	7	—	7	178	249	135	6	12	29
—	—	—	490	—	490	3,276	8,533	1,289	615	361	30
4	—	1	1	—	6	8	14	1	2	8	31
1,425	—	115	100	—	1,640	290	1,930	150	300	1,017	32
—	—	—	—	—	—	7	7	—	—	—	33
—	—	—	—	—	—	10	10	—	—	—	34
4	—	—	1	—	5	2	7	3	—	1	35
138	—	—	3	—	141	30	171	15	—	30	36
—	—	2	9	—	11	—	11	2	—	5	37
—	—	140	392	—	532	—	532	1	—	35	38
—	2	—	—	—	2	5	7	59	7	3	39
—	700	—	—	—	700	65	765	675	1,485	58	40
—	—	—	—	—	—	4	4	—	—	—	41
—	—	—	—	—	—	320	320	—	—	—	42
1	—	8	1	—	10	72	82	28	2	9	43
30	—	1,970	45	—	2,045	1,331	3,376	314	40	187	44
10	2	11	20	—	43	193	236	94	11	60	45
1,693	700	2,225	1,130	—	5,748	6,526	12,274	1,160	1,825	7,039	46
—	—	1	7	—	8	404	412	8	—	35	47
—	—	20	447	—	467	18,016	18,483	345	—	3,077	48
3	1	1	12	—	17	63	80	—	9	12	49
225	7	30	411	—	673	1,718	2,391	—	424	178	50
1	—	—	—	—	1	26	27	—	6	1	51
100	—	—	—	—	100	516	616	—	377	37	52
3	—	2	17	—	22	55	77	—	2	1	53
222	—	61	528	—	811	1,115	1,926	—	150	3	54
6	—	8	8	7	29	160	189	—	3	5	55
310	—	539	315	250	1,414	5,439	6,853	—	70	135	56
13	1	12	44	7	77	708	785	8	20	54	57
857	7	650	1,701	250	3,465	26,804	30,269	345	1,021	3,630	58
75	20	99	251	12	437	6,298	6,755	785	113	2,354	59
15,921	22,286	17,166	15,474	1,280	72,127	171,580	243,707	137,878	22,221	222,291	60
81	24	91	256	12	464	6,320	6,784	759	136	1,223	61
13,527	16,774	13,041	13,469	1,280	58,091	161,547	219,638	29,032	18,191	234,093	62

TABLE 39. Power Equipment in Use, and Power Equipment in ORDINARILY IN USE

No.	Provinces	Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers
1	Nova Scotia..... No.	33	9	58	65	—	165	1,211	1,376	280	83
2	H.P.	18,819	17,108	7,845	3,236	—	47,008	75,024	122,032	10,652	28,886
3	New Brunswick..... No.	11	—	14	69	—	94	311	405	4	16
4	H.P.	1,635	—	1,460	2,291	—	5,386	2,818	8,204	160	1,112
5	Quebec..... No.	29	8	128	258	5	428	11,335	11,763	476	157
6	H.P.	1,751	4,820	18,665	11,314	2,865	39,415	310,277	349,692	8,112	34,431
7	Ontario..... No.	86	14	150	554	5	809	13,952	14,761	726	211
8	H.P.	4,253	3,960	17,879	22,493	2,925	51,510	423,869	475,379	10,863	26,300
9	Manitoba..... No.	11	2	25	53	—	91	2,572	2,663	101	23
10	H.P.	890	1,850	2,698	908	—	6,346	86,553	92,899	1,538	3,713
11	Saskatchewan..... No.	14	—	32	67	—	113	425	538	102	13
12	H.P.	1,069	—	2,970	1,601	—	5,640	7,584	13,224	688	1,468
13	Alberta..... No.	86	13	39	303	—	441	3,211	3,652	339	153
14	H.P.	15,093	3,480	3,579	6,910	—	29,062	54,350	83,412	7,129	18,430
15	British Columbia..... No.	21	5	91	175	63	355	4,535	4,890	1,313	60
16	H.P.	3,885	19,625	15,412	7,503	30,089	76,514	101,170	177,684	39,441	10,929
17	Yukon..... No.	—	—	15	4	3	22	—	22	110	1
18	H.P.	—	—	1,785	76	15,000	16,861	—	16,861	4,344	125
19	Northwest Territories.... No.	—	—	9	15	1	25	114	139	48	6
20	H.P.	—	—	1,715	147	4,700	6,562	2,189	8,751	829	436
21	Canada..... No.	291	51	561	1,563	77	2,543	37,666	40,209	3,499	723
22	H.P.	47,395	50,843	74,008	56,479	55,579	284,304	1,063,834	1,348,138	83,756	125,830

TABLE 40. Power Equipment in Use, and Power Equipment in ORDINARILY IN USE

No.	Provinces	Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers
1	Nova Scotia..... No.	39	5	65	61	—	170	1,274	1,444	240	84
2	H.P.	29,454	6,683	8,315	3,052	—	47,504	77,467	124,971	11,051	28,911
3	New Brunswick..... No.	5	—	31	83	—	119	331	450	—	8
4	H.P.	290	—	3,045	1,888	—	5,223	3,035	8,258	—	420
5	Quebec..... No.	27	9	146	292	5	479	12,492	12,971	559	112
6	H.P.	924	4,860	21,617	13,917	2,930	44,248	335,588	379,836	9,286	75,977
7	Ontario..... No.	82	13	177	456	11	739	14,667	15,406	859	136
8	H.P.	4,044	4,015	23,394	21,173	3,130	55,756	450,661	506,417	14,032	15,321
9	Manitoba..... No.	10	1	21	52	—	84	2,892	2,976	134	18
10	H.P.	2,145	600	3,159	880	—	6,784	96,277	103,061	1,797	3,254
11	Saskatchewan..... No.	14	—	36	85	—	135	462	597	167	8
12	H.P.	789	—	3,356	2,194	—	6,339	6,908	13,247	1,312	1,213
13	Alberta..... No.	84	16	120	534	—	754	3,668	4,422	372	203
14	H.P.	14,700	3,835	6,992	12,825	—	38,352	61,335	99,687	7,783	23,173
15	British Columbia..... No.	22	5	118	196	59	400	5,144	5,544	1,646	44
16	H.P.	3,925	19,625	20,199	8,896	29,269	81,914	112,953	194,867	46,669	10,291
17	Yukon..... No.	—	—	17	4	3	24	—	24	232	—
18	H.P.	—	—	2,230	76	15,000	17,306	—	17,306	13,577	—
19	Northwest Territories.... No.	—	—	10	8	1	19	188	207	47	2
20	H.P.	—	—	1,995	51	4,700	6,746	3,315	10,061	661	120
21	Canada..... No.	283	49	741	1,771	79	2,923	41,118	44,041	4,256	615
22	H.P.	56,271	39,618	94,302	64,952	55,029	310,172	1,147,339	1,457,711	106,168	108,680

Reserve or Idle, in the Mineral Industry, by Provinces, 1947

IN RESERVE OR IDLE

Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers	Motor generator sets in use and in reserve Total	No.
9	—	4	8	—	21	84	105	9	6	25	1
1,093	—	555	350	—	1,998	2,583	4,581	363	1,764	2,407	2
1	—	2	4	—	7	65	72	1	1	1	3
45	—	124	98	—	267	718	985	7	155	10	4
10	4	21	58	—	93	2,958	3,051	49	50	324	5
547	4,057	2,640	3,753	—	10,997	66,789	77,786	1,817	7,083	27,384	6
14	1	24	111	—	150	1,765	1,915	119	37	522	7
3,396	90	3,353	7,044	—	13,883	56,935	70,818	4,807	3,086	100,753	8
4	3	6	10	—	23	314	337	16	8	66	9
315	2,515	1,395	616	—	4,841	11,391	16,232	322	1,270	47,741	10
3	—	2	6	—	11	82	93	18	4	24	11
260	—	665	82	—	1,007	1,591	2,598	145	445	1,748	12
34	11	2	22	—	69	220	289	18	19	96	13
7,247	3,748	469	537	—	12,001	5,240	17,241	627	2,565	4,264	14
6	5	23	36	12	82	811	893	137	9	133	15
624	6,364	2,531	984	1,280	11,783	15,871	27,654	17,126	1,672	49,296	16
—	—	1	—	—	1	—	1	265	—	11	17
—	—	180	—	—	180	—	180	1,671	—	264	18
—	—	6	1	—	7	21	28	127	2	21	19
—	—	1,129	5	—	1,134	429	1,563	2,147	151	226	20
81	24	91	256	12	464	6,320	6,784	759	136	1,223	21
13,527	16,774	13,041	13,469	1,280	58,091	161,547	219,638	29,032	18,191	234,093	22

Reserve or Idle, in the Mineral Industry, by Provinces, 1948

IN RESERVE OR IDLE

Steam engines	Steam turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers	Motor generator sets in use and in reserve Total	No.
5	1	2	6	—	14	72	86	40	4	24	1
873	450	145	316	—	1,784	2,435	4,219	488	1,664	3,060	2
7	—	3	4	—	14	55	69	—	5	3	3
1,370	—	289	98	—	1,757	544	2,301	—	405	8	4
8	4	21	47	—	80	2,828	2,908	32	36	362	5
388	4,057	2,405	4,018	—	10,868	73,103	83,971	1,703	12,221	29,356	6
14	—	29	109	—	152	1,730	1,882	87	29	552	7
3,416	—	5,939	7,754	—	17,109	56,983	74,092	1,394	1,867	97,382	8
7	—	8	10	—	25	386	411	73	6	67	9
2,660	—	1,863	701	—	5,224	12,542	17,766	544	1,060	38,861	10
1	—	4	5	—	10	115	125	28	3	29	11
30	—	1,550	73	—	1,653	2,296	3,949	314	345	1,958	12
26	11	7	40	—	84	260	344	11	20	152	13
6,540	3,759	1,409	1,541	—	13,249	7,031	20,280	403	2,917	5,051	14
7	4	21	28	12	72	831	903	115	10	147	15
644	14,020	2,445	928	1,280	19,317	16,036	35,353	2,399	1,742	46,011	16
—	—	1	—	—	1	—	1	272	—	6	17
—	—	240	—	—	240	—	240	6,086	—	379	18
—	—	3	2	—	5	21	26	127	—	12	19
—	—	881	45	—	926	610	1,536	2,147	—	225	20
75	20	99	251	12	457	6,298	6,755	785	113	1,354	21
15,921	22,286	17,166	15,474	1,280	72,127	171,580	243,707	15,478	22,221	222,291	22

CHAPTER TWO

THE GOLD MINING INDUSTRY

Definition of the Industry — Gold mining in Canada is classified into three principal industries: (a) the recovery of gold from the gravels and sands of stream channels or beaches, or what is defined as "The Alluvial Gold Mining Industry"; (b) the recovery of lode gold, which is designated "The Auriferous Quartz Mining Industry", and in which industry gold is usually the most important economic constituent of the ores mined and quartz the predominant gangue mineral; (c) gold is often found in various other mineral deposits, more particularly in those of copper, and for this reason the review of Canada's "Copper-Gold-Silver Mining Industry" is included here to complete a more comprehensive survey of Canadian gold production.

Production of gold in Canada during 1948 amounted to 3,529,608 fine troy ounces valued at \$123,536,280 compared with the production of 3,070,221 troy ounces worth \$107,457,735 in 1947. The number of persons employed during the year was approximately the same as in 1947. The price of gold remained at \$35 per troy ounce as the Canadian dollar was officially quoted at par with the United States dollar.

Ontario was the leading producer of gold with 59.4 per cent of the total, followed by Quebec with 21.8 per cent and British Columbia with 8.7 per cent. The balance of the year's output was from Manitoba, Northwest Territories, Saskatchewan, Yukon, Nova Scotia and Alberta.

The gold mines received aid from the Emergency Gold Mining Assistance Act, which was designed to assist high cost or marginal mines to continue in operation during a period of rising costs. The estimated aid due for 1948 operations exceeded \$9 millions.

The cumulative total production of gold in Canada from 1858 to 1948 was 104,426,864 troy ounces valued at \$3,123,302,345.

The footage of diamond drilling done for exploration continued to decrease. On auriferous quartz deposits the footage in 1948 was 2,180,863 compared with 3,276,946 in 1947 and 4,984,752 in 1946. Exploratory diamond drilling in copper-gold-silver deposits remained at the approximate footage of the previous year.

TABLE 41. Production of Gold, Fifty Years, 1899-1948

Year	Fine ounces	\$	Year	Fine ounces	\$
1899.....	1,028,529	21,261,584	1924.....	1,525,382	31,532,443
1900.....	1,350,057	27,908,153	1925.....	1,735,735	35,880,826
1901.....	1,167,216	24,128,503	1926.....	1,754,228	36,263,110
1902.....	1,032,161	21,336,667	1927.....	1,852,786	38,300,464
1903.....	911,559	18,843,590	1928.....	1,890,592	39,082,005
1904.....	796,374	16,462,517	1929.....	1,928,308	39,861,663
1905.....	684,951	14,159,195	1930.....	2,102,068	43,453,601
1906.....	556,415	11,502,120	1931.....	2,693,892	58,093,396
1907.....	405,517	8,382,780	1932.....	3,044,387	71,479,373
1908.....	476,112	9,842,105	1933.....	2,949,309	84,350,237
1909.....	453,865	9,382,230	1934.....	2,972,074	102,536,553
1910.....	493,707	10,205,835	1935.....	3,284,890	115,595,279
1911.....	473,159	9,781,077	1936.....	3,748,028	131,293,421
1912.....	611,885	12,648,794	1937.....	4,096,213	143,326,493
1913.....	802,973	16,598,923	1938.....	4,725,117	166,205,990
1914.....	773,178	15,983,007	1939.....	5,094,379	184,115,951
1915.....	918,056	18,977,901	1940.....	5,311,145	204,479,083
1916.....	930,492	19,234,976	1941.....	5,345,179	205,789,392
1917.....	738,831	15,272,992	1942.....	4,841,306	186,390,281
1918.....	699,681	14,463,689	1943.....	3,651,301	146,575,088
1919.....	766,764	15,850,423	1944.....	2,922,911	112,532,073
1920.....	765,007	15,814,098	1945.....	2,696,727	103,823,990
1921.....	928,329	19,148,320	1946.....	2,832,554	104,096,359
1922.....	1,263,364	26,116,050	1947.....	3,070,221	107,457,735
1923.....	1,233,341	25,495,421	1948.....	3,529,608	123,536,280

TABLE 42. Production of New Gold, by Provinces and Territories, 1939-1948

Year	Nova Scotia		Quebec		Ontario		Manitoba	
	Fine ounces	\$	Fine ounces	\$	Fine ounces	\$	Fine ounces	\$
1939.....	29,943	1,082,170	953,377	34,455,998	3,086,076	111,533,873	180,875	6,537,003
1940.....	22,219	855,432	1,019,175	39,238,238	3,261,698	125,574,988	152,295	5,863,357
1941.....	19,170	738,045	1,089,339	41,939,552	3,194,308	122,980,858	150,533	5,796,290
1942.....	12,989	500,076	1,092,388	42,056,938	2,763,819	106,407,032	136,226	5,244,701
1943.....	4,129	158,967	922,533	35,517,521	2,117,215	81,512,777	91,775	3,533,337
1944.....	3,840	224,840	745,784	28,751,184	1,731,836	66,875,686	74,158	2,855,468
1945.....	3,231	125,704	661,608	25,471,908	1,625,368	62,576,668	70,655	2,720,218
1946.....	4,321	158,797	618,339	22,723,958	1,813,333	66,639,988	79,402	2,918,024
1947.....	1,271	44,485	598,127	20,934,445	1,944,819	68,068,665	72,906	2,551,710
1948.....	188	6,580	770,625	26,971,875	2,095,377	73,338,195	106,176	3,716,160
Saskatchewan			British Columbia		Yukon		Northwest Territories	
1939.....	77,120	2,787,194	626,970	22,659,323	87,745	3,171,192	51,914	1,876,224
1940.....	102,925	3,962,613	617,011	23,754,924	80,458	3,097,633	55,159	2,123,621
1941.....	138,015	5,313,578	608,203	23,415,816	70,959	2,731,922	74,417	2,865,054
1942.....	178,871	6,886,533	474,339	18,262,052	83,246	3,204,971	99,394	3,826,669
1943.....	174,090	6,702,465	241,346	9,291,821	41,160	1,584,660	59,032	2,272,732
1944.....	122,782	4,727,107	195,857	7,578,994	23,818	916,993	20,775	799,838
1945.....	108,568	4,179,868	186,854	7,193,879	31,721	1,221,258	8,655	333,218
1946.....	112,101	4,119,712	136,242	5,006,893	45,286	1,664,260	23,420	860,685
1947.....	93,747	3,281,145	249,011	8,715,385	47,745	1,671,075	62,517	2,188,095
1948.....	87,927	3,077,445	306,998	10,744,930	60,614	2,121,490	101,625	3,556,875

Note. Annual Alberta production was less than 375 ounces for the years specified.

TABLE 43. Production of Gold from Auriferous Quartz and Base Metal Mines, by Months, 1947-1948

Month	Gold production from base metal mines		Gold production from auriferous quartz mines and placer deposits		Total	
	1947	1948	1947	1948	1947	1948
(fine ounces)						
January.....	16,430	30,540	217,764	242,875	234,194	273,415
February.....	14,797	29,544	208,274	232,106	223,071	261,650
March.....	26,849	28,970	237,084	258,790	263,933	287,760
April.....	23,847	32,435	231,104	253,689	254,951	286,124
May.....	28,351	28,464	240,624	260,010	268,975	288,474
June.....	29,508	28,481	239,655	261,621	269,163	290,102
July.....	26,310	32,584	235,151	263,663	261,461	296,247
August.....	28,092	30,147	232,862	275,305	260,954	305,452
September.....	26,458	31,676	221,245	263,287	247,703	294,963
October.....	27,325	31,363	231,503	275,626	258,828	306,989
November.....	23,427	32,742	228,808	278,657	252,235	311,399
December.....	25,723	32,728	249,030	294,305	274,753	327,033
Total.....	297,117	369,674	2,773,104	3,159,934	3,070,221	3,529,608

TABLE 44. Total (Cumulative) Recorded Production of Specified Metals to December 31, 1948

	Since	Unit of measure	Quantity	value
				\$
Gold.....	1858	fine ounces	104,426,864	3,123,302,345
Silver.....	1887	fine ounces	935,020,934	532,227,511
Copper.....	1886	tons	5,749,212	1,441,836,947
Nickel.....	1889	tons	2,560,005	1,401,714,171
Lead.....	1887	tons	4,962,865	514,220,548
Zinc.....	1898	—	—	462,521,753
Cobalt.....	1904	tons	18,358	36,791,980

TABLE 45. Production of New Gold, by Provinces and Sources, 1947 and 1948 (Gold at \$20.671834 per fine ounce)

	1947		1948	
	Fine troy ounces	\$	Fine troy ounces	\$
NOVA SCOTIA:				
In gold bullion.....	1,271	44,485	188	6,580
QUEBEC:				
In gold bullion.....	465,177	16,281,195	575,651	20,147,785
In anode copper ¹	125,858	4,405,030	184,499	6,457,465
In ores, etc., exported.....	7,092	248,220	10,475	366,625
Total.....	598,127	20,934,445	770,625	26,971,875
ONTARIO:				
Porcupine area—In gold bullion ²	937,415	32,809,525	998,838	34,959,330
Kirkland Lake—In gold bullion ^{2, 3}	627,094	21,948,290	652,032	22,821,120
Other gold mines—In gold bullion ²	331,260	11,594,100	394,481	13,806,835
In converter copper from nickel-copper ores.....	36,722	1,285,270	34,691	1,214,185
In ores, matte, etc., exported.....	12,328	431,480	15,335	536,725
Total.....	1,944,819	68,068,665	2,095,377	73,338,195
MANITOBA:				
In gold bullion.....	42,325	1,481,375	63,074	2,207,590
In blister copper.....	30,581	1,070,335	43,102	1,508,570
Total.....	72,906	2,551,710	106,176	3,716,160
SASKATCHEWAN:				
In alluvial gold.....	4	140	4	140
In blister copper.....	93,743	3,281,005	87,923	3,077,305
Total.....	93,747	3,281,145	87,927	3,077,445
ALBERTA:				
In alluvial gold.....	78	2,730	78	2,730
BRITISH COLUMBIA:				
In alluvial gold.....	5,732	200,620	18,133	634,655
In gold bullion.....	126,109	4,413,815	153,208	5,362,280
In base bullion.....	4,712	164,920	6,858	240,030
In ores, etc., exported.....	112,458	3,936,030	128,799	4,507,965
Total.....	249,011	8,715,385	306,998	10,744,930
NORTHWEST TERRITORIES:				
In ores, etc., shipped, and in placer.....	26	910	—	—
In gold bullion produced.....	62,491	2,187,185	101,625	3,556,875
Total.....	62,517	2,188,095	101,625	3,556,875
YUKON:				
In alluvial gold.....	47,679	1,668,765	60,606	2,121,210
In ores exported.....	66	2,310	8	280
Total.....	47,745	1,671,075	60,614	2,121,490
Canada.....	3,070,221	107,457,735	3,529,608	123,536,280

Note. The estimated average price of a troy ounce of fine gold in Canadian funds was \$35 in 1947 and 1948.

1. Includes a considerable quantity of gold recovered from gold ores.

2. Includes certain quantities of gold contained in slags, ores, etc., shipped to Canadian and foreign smelters.

3. Includes production of Larder Lake area.

TABLE 46 — Gold Recovered According to Nature of Ore, by Provinces, 1946-1948

Year and Province	Placer gold	Auriferous quartz ores	Copper-gold silver ores	Nickel-copper ores	Silver-lead and other ores	Total
(fine ounces)						
1946						
Nova Scotia.....	-	4,321	-	-	-	4,321
Quebec.....	-	440,263	167,850	-	10,226 ¹	618,339
Ontario.....	-	1,761,717	-	51,490	126	1,813,333
Manitoba.....	-	43,819	35,583	-	-	79,402
Saskatchewan.....	2	-	112,099	-	-	112,101
Alberta.....	110	-	-	-	-	110
British Columbia.....	15,530	108,944	7,287	-	4,481	136,242
Northwest Territories.....	-	23,420	-	-	-	23,420
Yukon.....	45,283	-	-	-	3	45,286
Total Canada.....	60,925	2,382,484	322,819	51,490	14,836	2,832,554
1947						
Nova Scotia.....	-	1,271	-	-	-	1,271
Quebec.....	-	488,547	102,488	-	7,092 ¹	598,127
Ontario.....	-	1,901,096	-	43,672	51	1,944,819
Manitoba.....	-	42,325	30,581	-	-	72,906
Saskatchewan.....	4	-	93,743	-	-	93,747
Alberta.....	78	-	-	-	-	78
British Columbia.....	5,732	211,572	15,241	-	16,466	249,011
Northwest Territories.....	26	62,491	-	-	-	62,517
Yukon.....	47,679	-	-	-	66	47,745
Total Canada.....	53,519	2,707,302	242,053	43,672	23,675	3,070,221
1948						
Nova Scotia.....	-	188	-	-	-	188
Quebec.....	-	605,186	154,964	-	10,475	770,625
Ontario.....	-	2,055,625	-	39,752	-	2,095,377
Manitoba.....	-	63,074	43,102	-	-	106,176
Saskatchewan.....	4	-	87,923	-	-	87,927
Alberta.....	78	-	-	-	-	78
British Columbia.....	18,133	255,415	19,333	-	14,117	306,998
Northwest Territories.....	-	101,625	-	-	-	101,625
Yukon.....	60,606	-	-	-	8	60,614
Total Canada.....	78,821	3,081,113	305,322	39,752	24,600	3,529,608

1. Contains a relatively small quantity of gold recovered from certain complex ores (lead, copper, etc.) which are difficult to classify.

TABLE 47 — Gold Production According to Method of Computation and Recovery, 1939-1948

Year	In alluvial gold	In crude gold bullion produced at mines ¹	In base bullion produced at lead smelters	In blister and anode copper produced ²	In ores, matte, slags, etc., exported	Total gold produced
	%	%	%	%	%	fine oz.
1939.....	2.5	82.1	0.6	10.4	4.4	5,094,379
1940.....	2.1	82.7	0.6	10.0	4.6	5,311,145
1941.....	2.0	82.6	0.4	10.3	4.7	5,345,179
1942.....	2.3	80.8	0.2	12.1	4.6	4,841,306
1943.....	1.45	78.71	0.19	15.61	4.04	3,651,301
1944.....	1.14	78.98	0.12	15.41	4.35	2,922,911
1945.....	1.55	76.77	0.09	15.30	6.29	2,696,727
1946.....	2.15	80.91	0.16	13.48	3.30	2,832,554
1947.....	1.74	84.4	0.15	9.41	4.3	3,070,221
1948.....	2.23	83.19	0.22	10.01	4.35	3,529,608

1. Includes a relatively small quantity of gold contained in shipments of gold ores, slags, etc., to Canadian smelters.

2. Canadian blister copper is sometimes refined in the United States; also contains a relatively small quantity of gold recovered from auriferous quartz ores.

TABLE 48. Production of Gold and Silver by Principal Mines, 1947

Property and Province	Ore hoisted	Material sorted (discarded)	Ore treated	Gold produced	Silver produced	Mill capacity 24 hours	See footnotes
	tons	tons	tons	fine oz.	fine oz.	tons	
NOVA SCOTIA:							
Consolidated Mining & Smelting Co. of Canada Ltd.....	1,664	—	1,664	844	83	40	1
Total Nova Scotia	—	—	—	1,271	97	—	2
QUEBEC:							
Belleterre Quebec	129,152	8,889	120,128	46,048	3,855	350	3
Canadian Malartic	335,317	—	335,317	35,380	28,893	1,000	3
Consolidated Bestlle	236,670	—	244,300	31,997	2,887	1,800	3
Consolidated Central Cadillac	45,717	907	45,577	5,722	905	400	3
East Malartic	240,438	—	240,438	33,335	8,658	1,500	3
Elder	60,803	—	—	8,695	—	—	4
Francoeur Gold	12,888	—	12,888	1,737	354	150	3
Lamaque Mining	209,495	—	209,495	50,855	8,540	1,200	3
Louvicourt Goldfield	78,367	—	79,834	7,982	2,080	400	3
Malartic Goldfields	200,334	—	200,334	37,543	1,684	750	3
Mic Mac	40,584	—	40,917	8,109	2,474	600	3
New Marlon	22,365	705	21,378	4,055	774	175	3
O'Brien	52,227	—	52,267	22,981	1,471	190	1, 3
Perron	102,110	—	101,509	18,672	1,440	—	—
Powell Rouyn	82,174	—	—	9,426	—	—	4
Senator-Rouyn	108,861	—	108,861	15,504	1,546	300	3
Sigma Mines (Quebec)	356,952	—	356,952	59,910	11,515	1,100	3
Siscoe Gold	71,262	—	71,262	21,556	2,405	270	1, 3
Sladen-Malartic	216,309	—	216,421	18,773	14,205	700	3
Stadacona Rouyn	134,070	—	134,070	23,906	5,795	500	3
Sullivan Consolidated	131,008	20,721	110,287	24,882	8,075	500	3
Total Principal Gold Mines	—	—	—	487,068	107,556	—	—
Copper-gold-silver and other ores	—	—	—	111,059	2,026,633	—	—
Total Quebec	—	—	—	598,127	2,134,189	—	—
ONTARIO:							
<i>Porcupine District</i>							
Aunor	172,489	—	172,489	58,211	4,667	300	3
Bonetal	39,095	956	33,139	4,268	427	—	5
Broulan Porcupine	91,999	8,360	83,639	14,650	1,665	350	3
Buffalo Ankerite	210,578	533	210,045	36,640	2,969	1,200	3
Coniarum	116,220	—	116,220	27,987	5,296	500	3
Delnite	102,125	—	101,927	28,519	2,189	520	3
Dome	595,200	—	595,200	159,384	32,552	1,700	1, 3
Hallnor	122,272	—	112,272	41,985	3,055	400	3
Hollinger Cons. (Timmins)	1,022,058	—	1,021,955	241,241	42,162	3,900	3
(Ross)	65,472	—	65,397	12,633	36,213	300	3
Hoyle	107,406	2,907	104,499	10,614	—	—	6
McIntyre	633,819	—	630,270	187,211	53,306	2,400	3
Pamour Porcupine	299,633	—	299,633	27,256	4,335	1,600	3
Paymaster Cons.	118,623	—	138,085	33,186	11,385	600	3
Preston East Dome	226,345	—	225,812	52,032	6,350	800	1, 3
<i>Kirkland Lake District</i>							
Bidgood Kirkland	30,799	—	30,669	11,760	1,950	125	3
Kirkland Golden Gate	6,288	—	6,228	1,209	263	125	1, 3
Kirkland Lake	91,171	—	91,171	46,042	3,323	400	3
Lake Shore	309,717	—	309,717	134,847	36,283	1,500	3
Macassa	97,507	—	97,507	39,319	7,036	400	3
Sylvanite	151,146	—	151,140	41,231	9,792	600	3
The Teck-Hughes	71,360	—	71,360	29,885	4,281	600	3
Toburn	42,801	952	41,849	14,588	2,665	175	3
Upper Canada	109,556	—	109,556	34,479	11,494	325	3
Wright Hargreaves	183,059	—	183,059	85,576	17,593	1,200	3
<i>Larder Lake District</i>							
Chesterville	295,408	—	295,408	34,109	1,782	900	3
Kerr-Addison	779,753	—	780,153	150,039	7,732	1,800	3
Omega	33,327	—	33,965	3,965	631	500	3

1. Amalgamation process.
2. Receipts at Royal Canadian Mint.
3. Cyanidation.
4. Shipped to smelter.
5. Shipped to Broulan mill.
6. Shipped to Pamour Porcupine.

TABLE 48. Production of Gold and Silver by Principal Mines, 1947 — Con.

Property and Province	Ore hoisted	Material sorted (discarded)	Ore treated	Gold produced	Silver produced	Mill capacity 24 hours	See footnotes
	tons	tons	tons	fine oz.	fine oz.	tons	
ONTARIO — Con.							
<i>Matatchewan District</i>							
Hollinger Cons. (Young-Davidson).....	252,912	—	253,059	24,091	5,040	1,050	1
Matatchewan Consolidated.....	250,504	—	250,504	28,084	11,833	1,000	1
<i>Thunder Bay District</i>							
Hard Rock.....	131,828	33,010	98,818	19,280	420	450	1
Leitch.....	37,782	9,327	30,417	24,216	850	90	1, 2
Little Long Lac.....	93,584	15,368	78,216	21,263	1,840	300	1
MacLeod-Cockshutt.....	276,176	68,916	207,260	43,327	869	650	1
Magnet Consolidated.....	22,224	—	22,224	8,654	996	150	1, 2
Maylac.....	1,065	308	757	204	12	—	—
<i>Patricia District</i>							
Berens River.....	27,395	—	27,395	5,378	244,262	225	3
Central Patricia.....	96,971	—	96,971	28,544	2,383	400	1
Cochenour Willans.....	60,747	—	60,747	21,103	874	225	1, 2
Hasaga.....	61,920	175	61,171	8,588	4,470	350	1, 2
Jason.....	18,532	—	18,532	5,700	562	125	1, 2
Madsen Red Lake.....	142,136	—	142,136	32,293	7,754	400	1, 2
McKenzie Red Lake.....	83,045	6,178	76,867	19,717	4,650	250	1
McMarnac Red Lake.....	8,989	—	8,917	1,997	118	75	1, 2
Pickle Crow.....	91,459	4,198	87,227	38,653	5,381	400	1, 2
Total Principal Gold Mines.....	—	—	—	1,893,964	603,710	—	—
Nickel-copper and other mines.....	—	—	—	50,855	1,738,322	—	—
Total Ontario.....	—	—	—	1,944,819	2,342,032	—	—
MANITOBA:							
San Antonio.....	137,718	—	137,867	42,143	6,486	550	1, 2
Copper-gold-silver ores and other.....	—	—	—	30,763	417,879	—	—
Total Manitoba.....	—	—	—	72,906	424,365	—	—
SASKATCHEWAN:							
Copper-gold-silver and alluvial ores.....	—	—	—	93,747	1,282,546	—	—
ALBERTA:							
Placer gold.....	—	—	—	78	16	—	—
BRITISH COLUMBIA:							
Bralorne.....	136,838	3,791	133,047	61,912	16,531	500	2
Cariboo Gold Quartz.....	88,623	—	88,623	20,126	1,710	375	1
Hedley Masco.....	29,151	—	29,151	10,736	1,995	225	1
Island Mountain.....	41,197	—	41,197	17,721	2,252	150	1
Kelowna Exploration.....	102,597	—	102,597	36,589	2,379	300	1
Kenville.....	4,404	1,518	2,886	245	89	125	1
Polaris-Taku.....	92,039	—	92,039	22,714	—	280	3
Pioneer.....	44,696	3,392	41,304	19,332	3,560	400	1, 2
Privateer.....	23,244	9,043	14,201	11,509	5,648	90	1
Reno Gold.....	7,137	—	7,137	1,627	—	50	3
Sheep Creek.....	29,821	—	29,821	8,246	2,355	150	1
Silbak Premier.....	59,343	—	59,343	12,232	67,917	500	3
Total Principal Gold Mines.....	—	—	—	222,989	104,206	—	—
Placer gold.....	—	—	—	5,732	770	—	—
Copper-gold and other ores.....	—	—	—	20,290	5,799,161	—	—
Total British Columbia.....	—	—	—	249,011	5,903,367	—	—
YUKON:							
Placers and other.....	—	—	—	47,745	372,051	—	—
NORTHWEST TERRITORIES:							
Negus.....	28,000	2,644	25,356	17,118	4,763	150	1, 2
Cons. Mining & Smelting Co. Ltd.....	94,515	—	94,515	42,284	11,120	350	1, 2
Thompson-Lundmark.....	11,368	—	11,309	3,062	652	125	1
Total Northwest Territories.....	—	—	—	62,517	45,355	—	—
Total Canada.....	—	—	—	3,070,221	12,504,018	—	—

1. Cyanidation.

2. Amalgamation process.

3. Flotation process, concentrates exported.

TABLE 49. Production of Gold and Silver by Principal Mines, 1948

Property and Province	Ore hoisted	Material sorted (discarded)	Ore treated	Gold produced	Silver produced	Mill capacity 24 hours	See footnotes
	tons	tons	tons	fine oz.	fine oz.	tons	
NOVA SCOTIA:							
Royal Canadian Mint receipts	—	—	—	188	8	—	—
QUEBEC:							
Anglo-Rouyn	7,048	—	7,048	1,366	946	—	1
Belleterre	144,123	11,447	132,626	42,087	4,443	350	2
Bevcourt	13,700	—	8,720	—	615	—	3
Canadian Malartic	344,528	—	344,528	32,805	24,350	1,000	2
Consolidated Beattie	462,000	—	462,000	49,890	7,054	1,800	2
Consolidated Central Cadillac	119,373	2,561	116,665	15,558	1,945	400	2
Donalda	13,810	—	13,810	2,552	2,330	—	4
East Malartic	295,693	—	295,693	38,976	10,510	1,500	2
Elder	96,632	—	—	11,210	—	—	5
Hosco	22,912	—	21,692	2,864	55	150	1, 2
Lamaque	351,110	—	351,110	71,797	14,032	1,200	2
Louvencourt	145,180	15,824	129,344	16,440	4,335	450	2
Malartic Goldfields	299,518	—	299,518	60,345	2,169	750	2
New Marlon	63,293	1,840	61,453	11,016	2,271	175	2
New Rouyn Merger	23,514	—	—	4,169	—	—	5
O'Brien	57,248	—	56,935	29,215	1,833	200	1, 2
Perron	112,981	195	112,786	20,807	1,400	425	2
Powell Rouyn	124,256	—	21,034	15,195	373	450	2
Senator Rouyn	135,932	—	135,932	19,114	5,129	600	2
Sigma	408,155	—	408,155	68,769	14,674	1,100	2
Siscoe Gold	67,222	—	67,222	16,212	2,226	270	1, 2
Staden Malartic	205,859	1,689	204,170	15,875	8,322	700	2
Stadacona	132,709	—	132,709	25,062	6,438	375	2
Sullivan Consolidated	176,971	31,064	145,907	31,418	9,660	500	2
Total Principal Gold Mines	—	—	—	604,260	124,811	—	—
Copper-gold and other ores	—	—	—	166,365	2,251,943	—	—
Total Quebec	—	—	—	770,625	2,376,754	—	—
ONTARIO:							
<i>Porcupine District</i>							
Aunor	176,564	—	176,564	57,079	4,511	300	2
Bonetal	42,919	—	42,919	4,916	492	—	6
Broulan	80,824	11,016	69,808	14,978	2,116	350	2
Buffalo Ankerite	188,714	1,500	186,635	31,277	2,398	1,200	2
Coniaurum	129,175	—	129,175	33,859	6,317	500	2
Delinte	124,692	—	124,835	33,789	2,708	520	2
Dome	620,800	—	620,800	155,470	29,762	1,700	1, 2
Hallnor	127,059	—	127,059	45,216	3,379	400	2
Hollinger Consolidated:							
(Timmins)	1,124,673	—	1,127,523	263,967	51,214	3,900	2
(Ross)	106,254	—	106,065	19,495	48,247	300	2
Hoyle	104,589	1,128	103,461	8,309	4	—	7
Hugh Pam	1,207	—	1,207	46	—	—	6
McIntyre Porcupine	673,654	—	673,950	194,525	58,068	2,400	2
Naybob (1945)	11,481	—	11,481	547	58	—	2
Pamour	412,352	—	412,352	37,914	5,178	1,600	2
Paymaster	165,066	—	158,123	33,968	12,506	600	2
Preston East Dome	238,057	—	237,406	53,116	6,357	800	1, 2
Porcupine Reef	47,817	—	47,817	10,353	—	—	6
<i>Kirkland Lake District</i>							
Bidgood Kirkland	43,897	—	43,767	11,268	1,840	125	2
Kirkland Lake Gold	93,882	—	93,882	39,310	3,391	400	2
Lake Shore	344,542	—	344,542	144,904	53,015	1,500	2
Macassa	103,650	—	103,650	40,791	6,397	400	2
Sylvanite	167,435	—	167,435	44,502	10,047	600	2
Teck-Hughes	73,885	—	73,885	28,772	5,041	600	2
Toburn	50,961	5,152	45,809	14,227	3,709	175	2
Upper Canada	119,279	—	119,279	36,574	11,549	350	2
Wright-Hargreaves	187,790	—	187,790	87,540	18,002	1,200	2
<i>Larder Lake District</i>							
Chesterville	306,713	—	310,564	37,484	1,591	900	2
Kerr-Addison	895,215	—	889,711	166,617	9,481	2,000	2
<i>Matatchewan District</i>							
Hollinger Consolidated (Young Davidson)	251,295	—	250,509	22,264	4,336	1,050	2
Matatchewan-Consolidated	256,427	—	256,252	26,695	12,270	1,000	2
<i>Sudbury District</i>							
Renaite	100,622	—	100,072	23,918	8,048	425	2

1. Amalgamation process.
2. Cyanidation.
3. Shipped to Perron mill.
4. Shipped to Powell Rouyn mill.
5. Shipped to smelter.
6. Shipped to Broulan mill.
7. Shipped to Pamour Porcupine.

TABLE 49. Production of Gold and Silver by Principal Mines, 1948 - Con.

Property and Province	Ore hoisted	Material sorted (discarded)	Ore treated	Gold produced	Silver produced	Mill capacity 24 hours	See footnotes
	tons	tons	tons	fine oz.	fine oz.	tons	
ONTARIO (Concluded):							
Thunder Bay District							
Hardrock.....	87,128	5,092	82,036	10,658	735	450	1
Leitch.....	42,861	9,854	31,822	27,361	1,050	90	1, 2
Little Long Lac.....	112,528	16,698	95,830	25,368	2,324	300	1, 2
MacLeod-Cockshutt.....	230,175	53,954	176,221	40,318	637	650	1
Magnet Consolidated.....	21,140	-	21,140	8,173	918	150	1, 2
Patricia District							
Berens River.....	49,930	-	49,930	10,274	402,859	225	3
Central Patricia.....	141,028	-	141,028	42,359	3,643	400	1
Cochenour Willans.....	75,591	-	75,591	34,089	925	225	1, 2
Dickenson Red Lake.....	8,861	-	1,465	148	-	150	1
Hasaga.....	136,307	815	135,212	22,079	10,895	400	1, 2
Madsen Red Lake.....	165,780	-	151,686	35,228	8,286	400	1, 2
McKenzie Red Lake.....	88,974	13,007	75,967	20,274	4,755	240	1
McMarnac Red Lake.....	13,214	-	13,154	4,060	115	75	1, 2
Pickle Crow.....	115,072	7,918	107,319	46,461	6,747	400	1, 2
Starratt-Olsen.....	34,031	-	33,501	4,230	691	500	1
Total Principal Gold Mines.....	-	-	-	2,054,770	826,612	-	-
Nickel-copper and other mines.....	-	-	-	40,607	2,383,495	-	-
Total Ontario.....	-	-	-	2,095,377	3,210,107	-	-
MANITOBA:							
Jeep Gold.....	7,906	-	8,294	7,685	-	-	4
Ogama-Rockland.....	31,946	1,107	27,546	9,740	1,044	150	1
San Antonio.....	154,820	-	154,953	45,498	7,981	550	1, 2
Copper-gold and other ores.....	-	-	-	43,253	728,273	-	-
Total Manitoba.....	-	-	-	106,176	737,298	-	-
SASKATCHEWAN:							
Copper-gold and alluvial ores.....	-	-	-	87,927	1,323,900	-	-
ALBERTA:							
Alluvial gold.....	-	-	-	78	7	-	-
BRITISH COLUMBIA:							
Bralorne.....	150,240	2,121	148,119	75,459	21,460	500	2
Cariboo Gold Quartz.....	73,726	-	73,726	22,757	2,322	375	1
Hedley Mascot.....	42,788	-	42,788	13,880	3,470	225	1
Hedley Monarch.....	320	65	255	137	117	-	-
Island Mountain.....	40,752	-	40,752	16,907	2,487	150	1
Kelowna Exploration.....	115,556	-	115,556	42,397	3,155	325	1
Kenville.....	46,228	10,289	35,939	10,036	4,152	125	1
Kentney Central.....	1,150	600	550	741	606	-	-
Privater.....	23,648	9,248	14,402	10,484	5,059	75	1
Pioneer.....	55,821	3,418	52,211	23,643	5,043	325	1
Polaris-Taku.....	102,624	-	102,624	29,156	1,245	300	3
Sheep Creek Gold.....	25,432	-	25,432	8,273	2,624	150	1
Total Principal Gold Mines.....	-	-	-	253,870	51,740	-	-
Placer gold.....	-	-	-	18,133	2,017	-	-
Copper-gold and other ores.....	-	-	-	34,995	6,664,151	-	-
Total British Columbia.....	-	-	-	306,998	6,717,908	-	-
NORTHWEST TERRITORIES:							
Consolidated Mining & Smelting.....	100,697	-	100,697	55,253	14,456	350	1, 2
Giant Yellowknife.....	42,092	-	49,985	8,152	2,000	500	2
Negus.....	55,181	3,598	51,497	23,303	5,989	175	1, 2
Thompson-Lundmark.....	41,284	3,241	37,757	14,653	2,904	125	1
Other ores.....	-	-	-	264	33	-	-
Total Northwest Territories.....	-	-	-	101,625	25,382	-	-
YUKON:							
Placer and silver-lead ores.....	-	-	-	60,614	1,718,618	-	-
Total Canada.....	-	-	-	3,529,608	16,109,982	-	-

1. Cyanidation.
2. Amalgamation process.
3. Flotation process, concentrates exported.
4. Shipped to San Antonio mill.

TABLE 50. Gold Production of the World¹ 1944, 1947 and 1948 (From American Bureau of Metal Statistics)

Country	1944	1947 (fine ounces)	1948
NORTH AMERICA:			
United States	1,001,865	2,320,531	2,099,178
Canada	2,922,911	3,070,221	3,527,606
Mexico	508,870	464,728	339,183
Newfoundland	18,329	14,600	12,252
Total North America	4,451,975	5,870,080	5,978,219
CENTRAL AMERICA AND WEST INDIES	275,000	250,000	270,000
SOUTH AMERICA:			
Brazil	178,300	135,000	130,000
Chile	203,749	168,852	164,254
Colombia	553,530	383,027	335,260
Ecuador	84,234	55,000	70,000
Peru	175,180	116,014	111,160
Guiana:			
British	18,986	26,389	
Dutch	5,722	4,128	45,000
French	18,583	14,930	
Venezuela	59,064	21,830	43,000
Other South America	25,000	20,000	20,000
Total South America	1,322,348	945,176	918,674
EUROPE	400,000	400,000	400,000
OCEANIA:			
New South Wales	62,610	50,082	57,463
Queensland	51,223	72,281	69,004
Victoria	54,086	84,709	68,580
Western Australia	466,265	703,886	664,986
Tasmania	16,653	15,051	12,904
New Guinea	-	59,202	86,556
New Zealand	142,287	112,260	93,903
Fiji	40,443	94,295	98,000
Other Oceania	6,030	11,645	17,491
ASIA:			
India	188,200	171,782	185,000
Philippines	2	64,441	212,874
Saudi Arabia	8,683	52,000	74,000
Japan	356,200	69,200	-
Korea	118,957	-	-
Other Asia	30,676	5,208	-
AFRICA:			
Bechuanaland	11,575	7,381	-
Belgian Congo	364,195	301,438	299,734
British West Africa ³	544,582	560,000	675,000
Ethiopia	63,720	25,700	-
French Cameroons	18,378	11,574	-
French Equatorial Africa	74,104	63,100	47,000
Kenya	42,273	21,959	22,000
Liberia	30,772	19,000	-
Madagascar	9,388	1,521	2,000
Rhodesia	593,038	522,966	514,620
Tanganyika	55,148	47,300	57,557
Transvaal, Cape Colony, Natal	12,277,228	11,197,638	11,574,871
Uganda	2,593	1,432	-
Other Africa	16,940	21,503	-
Total World - Except Russia	22,096,170	21,833,804	-

1. In compiling this table, free use has been made of the reports of the United States Director of the Mint.

2. Included with the United States.

3. Comprising Gold Coast, Sierra Leone and Nigeria.

TABLE 51. Estimated Average Monthly Value of an Ounce of Fine Gold, Expressed in Canadian Funds, 1933-1948

Month	1933	1934	1935	1936	1937	1938	1939	(1940) (1945)	1946	(1947) (1948)
(Dollars)										
January.....	23.64	33.05	34.95	35.06	35.01	34.99	35.30	38.50	38.50	35.00
February.....	24.74	35.29	35.05	35.18	35.01	35.00	35.19	38.50	38.50	35.00
March.....	24.78	35.08	35.40	35.11	34.98	35.05	35.13	38.50	38.50	35.00
April.....	25.33	34.93	35.18	35.13	34.95	35.15	35.15	38.50	38.50	35.00
May.....	27.75	34.94	34.95	35.00	34.94	35.22	35.13	38.50	38.50	35.00
June.....	28.24	34.73	35.05	35.09	35.02	35.36	35.07	38.50	38.50	35.00
July.....	30.58	34.59	35.08	34.91	35.05	35.24	35.06	38.50	35.35	35.00
August.....	30.09	34.19	35.09	35.00	35.00	35.12	35.01	38.50	35.00	35.00
September.....	31.79	34.18	35.28	34.99	35.00	35.12	37.21	38.50	35.00	35.00
October.....	31.48	34.27	35.49	34.99	34.99	35.32	38.43	38.50	35.00	35.00
November.....	32.68	34.16	35.37	34.95	34.98	35.25	38.50	38.50	35.00	35.00
December.....	32.14	34.57	35.33	34.98	34.93	35.28	38.50	38.50	35.00	35.00
Yearly Average.....	28.60	34.50	35.19	35.03	34.99	35.17	36.14	38.50	36.75	35.00

TABLE 52. Precious Metals Consumed by the Jewellery and Silverware Industry, 1946-1948

Material	Cost at Works		
	1946	1947	1948
	\$	\$	\$
Fine gold.....	5,318,697	5,145,343	5,882,780
Gold alloys.....	856,206	586,108	636,185
Fine silver.....	4,317,761	2,708,620	2,893,952
Silver alloys.....	1,947,151	1,840,066	3,037,540
Platinum.....	696,405	439,577	469,408
Old gold, jewellers' findings, waste and scrap for refining.....	1,335,776	1,175,922	1,571,467
Gold-filled wire and stock.....	379,308	228,242	348,146

LEGISLATION AND TAXATION

The Minister of Finance, on March 4, 1947, announced certain tax concessions applicable to gold mines, defining gold mines as those mines where the value of output was to the extent of 70 per cent or more from gold. These concessions are briefly as follows:

1. The depletion allowance for gold mines was increased from 33 1/3 per cent to 40 per cent of the net profits. This allowance was made applicable as from January 1, 1947.

Where the depletion allowances on gold mines as calculated on the percentage-of-net-profits basis amounted to less than \$4.00 per ounce of gold produced in fiscal periods ending after June 30, 1946, it was provided that the depletion allowance would be at the rate of \$4.00 per ounce of gold produced, and that the amount so calculated would be recognized as an expense for all purposes of the Income War Tax Act.

2. In the case of new gold mines exempt for three years from income taxation under Section 4(x), Income War Tax Act, provision was made that depreciation shall not require to be written off during the period of exemption, but may, during or following that period, be written off at a rate not exceeding 25 per cent per year. Provision

was also made that pre-production expenses shall not be required to be written off during the exempt period, but shall be written off in the four years following such exempt period at a rate not exceeding 25 per cent per year.

On December 11, 1947, the Minister of Finance announced that a proposal would be placed before Parliament whereby the Government, through the Department of Mines and Resources, would undertake to make payments to gold mines to assist in defraying part of the increased costs of production on production after December 1, 1947, for a term of three years. This payment would be determined by taking half of the amount by which the mine's cost of gold production per fine ounce exceeds \$18.00 and applying this to the amount by which production in the assistance year exceeds two-thirds of the production in the base year, that is, the twelve months ended June 30, 1947. In the case of new mines, the payment as described above would be made on the entire production in the first year, and in the two succeeding years, on the amount by which current production exceeds two-thirds of the first year's production. This assistance would apply in the case of gold produced after December 1, 1947.

TABLE 53. Emergency Gold Mining Assistance Act—Estimated Aid Due on Operations During 1948

Province	Estimated aid due
	\$
Nova Scotia.....	150
Quebec.....	2,830,428
Ontario.....	4,730,135
Manitoba.....	163,509
British Columbia.....	1,073,621
Northwest Territories.....	667,361
Canada.....	9,465,204

THE ALLUVIAL GOLD MINING INDUSTRY

By far the major portion of alluvial gold was produced in the Yukon and British Columbia; relatively small quantities were obtained in Alberta and the Northwest Territories.

In 1948 there were 78,821 troy ounces of fine gold recovered from crude gold obtained in Canadian alluvial deposits. This is an increased production of 14.7 per cent from the preceding year. Reviewing the past twenty years, it is noted that the peak of production of placer gold occurred in 1939, and lowest annual output was in 1944.

No placer gold mining operations were reported for 1948 from the eastern provinces, including Quebec and Ontario.

Saskatchewan and Alberta — The small amount of gold, considered as being placer in origin, received at the Royal Canadian Mint, Ottawa, is assumed to have come from along the North Saskatchewan River. There has been activity in this district, vicinity of Edmonton, dating from about 1860.

British Columbia — It has been found impractical to obtain complete reports for each individual placer mining operation in British Columbia inasmuch as a considerable quantity of the crude placer gold is recovered annually by prospectors of no fixed abode who, in many instances, market their recoveries through local merchants and banks. Recoveries in 1948 were made chiefly from deposits located in the Atlin and Cariboo districts.

Yukon — About 75 per cent of the placer gold recovered in Canada during 1948 was found in the creeks of the Yukon.

TABLE 54. Summary Statistics of Alluvial Gold Mining, 1947 and 1948

	1947			1948		
	British Columbia	Yukon	Alberta, Saskatchewan and Northwest Territories ¹	British Columbia	Yukon	Alberta and Saskatchewan ¹
Number of firms and individual operators ²	41	5	—	43	4	—
Number of employees.....	64	394	—	126	369	—
Salaries and wages paid..... \$	141,979	1,542,470	—	330,411	1,272,654	—
Electricity generated for own use..... K.W.H.	25,000	28,330,800	—	—	22,868,900	—
Electricity generated for sale.....	—	5,934,500	—	—	6,486,300	—
Crude gold recovered ³ fine oz.	4,675	47,679	108	18,133	60,606	82
Quantity of material handled.... cu.yd.	—	7,054,753	—	1,692,585	7,813,449	—
Length of ditches ⁴ miles	15	48	—	33	53	—
Total gross value of alluvial products..... \$	200,620	1,668,785	3,780	636,167	2,130,525	2,870
Fuel and electricity used..... \$	15,523	124,073	—	68,079	124,698	—
Process supplies used..... \$	59,981	18,900	—	235,597	26,694	—
Cost of freight and express on dust, nuggets, bullion, etc., shipped ³ \$	817	17,988	—	1,581	23,047	—
Cost of smelter, refinery and mint treatment on material shipped ³ \$	199	598	—	2,648	805	—
Total net value of alluvial products..... \$	124,100	1,507,206	3,780	328,262	1,955,281	2,870

1. Represents receipts of fine gold at Dominion Assay Office, Vancouver, British Columbia, or Royal Canadian Mint, Ottawa, Ontario.
2. In addition to the number shown in the table, there are numerous small operators from whom returns were not obtainable.
3. Information not completely available.
4. Includes flume in use.

TABLE 55. Alluvial Gold Recovered and Quantity of Material Handled¹, 1939-1948

Year	British Columbia				Yukon				Average value gold per fine ounce
	Material handled ²	Gold recovered	Ounces per cu. yd.	Value per cu. yd.	Material handled ²	Gold recovered	Ounces per cu. yd.	Value per cu. yd.	
	cu. yd.	fine oz.	fine oz.	\$	cu. yd.	fine oz.	fine oz.	\$	
1939.....	4,779,407	39,797	0.0083	0.2999	11,152,198	85,572	0.0077	0.2782	36.14
1940.....	6,680,457	32,128	0.0048	0.1848	11,551,170	79,905	0.0069	0.2656	38.50
1941.....	4,587,103	35,020	0.0076	0.2926	8,792,220	70,847	0.0081	0.3119	38.50
1942.....	1,884,887	26,323	0.0139	0.5352	11,875,833	83,198 ³	0.0070	0.2695	38.50
1943.....	754,202	11,680	0.0156	0.6006	8,028,117	41,157 ³	0.0051	0.1964	38.50
1944.....	531,737	9,402	0.0177	0.6815	4,687,174	23,816 ³	0.0050	0.1956	38.50
1945.....	263,527	10,071	0.0382	1.4707	2,981,599	31,721 ³	0.0106	0.4081	38.50
1946.....	428,603	15,530	0.0362	1.3303	5,917,740	45,283 ³	0.0076	0.2793	36.75
1947.....	478,667	5,732	0.0120	0.4191	7,054,753	47,679 ³	0.0067	0.2365	35.00
1948.....	1,692,585	18,133	0.0107	0.3750	7,813,449	60,606 ³	0.0078	0.2715	35.00

1. In addition, relatively small amounts of alluvial gold have been recovered in Quebec, Saskatchewan and Alberta but complete data are not available; also, data relating to material handled, particularly those pertaining to small operations, are not complete and necessitate estimates in order to obtain totals.

2. Data partly conjectural and include some overburden and barren material.

3. Fine gold received at Royal Canadian Mint (Vancouver Assay Office); previous years' figures represent estimated fine gold in crude gold recovered.

THE AURIFEROUS QUARTZ MINING INDUSTRY

The great part of the gold of Canada comes from the Canadian Shield, an immense area of precambrian rocks extending from the Labrador Coast westward almost to the mouth of the MacKenzie River. The area of the shield is roughly 1,825,000 square miles, almost half of Canada. The deposits of the shield are of two main types, namely, quartz veins, from which most of the gold, up to the present time, has been won, and sulphide deposits which produce a smaller but very considerable proportion. The second great source of gold in Canada has been the Western or Cordilleran section, comprising British Columbia and Yukon Territory — the gold production from this section includes relatively large quantities obtained from alluvial deposits. The third principal area in which gold deposits occur is the Acadian region of Eastern Canada, the metal occurring principally in Nova Scotia where it has been mined since 1862.

In 1948 there were 280 active auriferous quartz mines compared with 517 in 1947, indicating that many prospects ceased development work. The number of producing properties totalled 101 during the year under review, as against 104 in the preceding year.

The gross value of output of the entire auriferous quartz mining industry, including the value of all recoverable metals, gold, silver, etc., totalled \$108,664,082 in 1948 compared with \$96,126,278 in 1947. The major producing provinces were Ontario with \$72,607,828, Quebec with \$21,351,998, and British Columbia with \$8,927,221.

Employees in the lode gold mining industry totalled 22,566 compared with 22,906 in 1947. Salaries and wages paid amounted to \$59,515,678 as against \$54,612,474 in the preceding year. Fuel and electricity cost \$6,982,231 and process supplies used amounted to \$19,536,566. The Canadian gold mining companies paid \$4,537,724 in taxes and spent \$2,496,382 in prospecting and preliminary exploration of new areas or deposits.

TABLE 56. Principal Statistics of the Auriferous Quartz Mining Industry, 1947 and 1948

	Number of active opera- tors ¹	Number of em- ployees	Salaries and wages	Cost of fuel and electricity	Cost of pro- cess supplies used ²	Amount of freight, etc. paid on ship- ments of ore, slag, etc.	Smelter and refinery treatment costs	Gross value of bullion ore, concen- trates or residues shipped from mines ³	Net value of bullion, ore, concen- trates or residues shipped from mines ³
			\$	\$	\$	\$	\$	\$	\$
1947									
Nova Scotia.....	3	14	21,261	3,883	100	1,597	1,031	29,990	23,379
Quebec.....	258	4,855	11,413,084	1,906,315	3,385,331	72,985	197,354	17,264,111	11,702,126
Ontario.....	153	14,574	34,478,742	4,019,260	11,706,846	103,372	439,498	66,962,574	50,693,598
Manitoba.....	22	601	1,497,783	218,931	277,124	3,676	12,034	1,486,035	974,270
Saskatchewan.....	—	—	—	—	—	—	—	—	—
British Columbia.....	40	2,020	4,720,450	540,792	2,054,829	276,217	281,518	8,184,566	5,031,210
Northwest Territories.....	39	830	2,441,859	435,393	361,995	11,722	16,699	2,199,002	1,373,193
Yukon.....	1	12	39,295	5,085	64,741	—	—	—	69,826
Canada.....	516	22,906	54,612,474⁴	7,129,659	17,850,966	469,569	948,134	96,126,278	69,727,950
1948									
Nova Scotia.....	3	6	7,951	259	10	—	17	1,515	1,229
Quebec.....	140	4,929	12,096,719	1,730,226	4,184,514	161,030	337,378	21,351,998	14,938,850
Ontario.....	89	14,353	38,056,266	3,903,298	12,633,666	137,358	508,991	72,607,828	55,424,515
Manitoba.....	10	679	1,705,538	258,294	325,945	7,962	57,772	2,208,978	1,559,005
Saskatchewan.....	1	3	5,071	735	—	—	—	—	735
British Columbia.....	26	1,816	5,071,423	548,593	1,827,835	294,730	225,383	8,927,221	6,030,680
Northwest Territories.....	11	780	2,572,710	540,826	564,596	7,973	20,179	3,566,542	2,432,968
Canada.....	280	22,566	59,515,678⁴	6,982,231	19,536,566	609,053	1,149,720	108,664,082	80,386,512

1. Producing mines: 1947—104; 1948—101.

2. Explosives, chemicals, etc.

3. Value of bullion produced plus value of ore, concentrates, etc., shipped.

4. Includes in salaries \$7,606,569 for 1947 and \$7,734,997 in 1948.

TABLE 57. Principal Statistics Relating to Producers only in the Auriferous Quartz Mining Industry, 1948

Province	Number of producing plants or mines	Number of employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies used ¹	Value of freight paid on shipments of ore, slag, etc.	Smelter and refinery treatment costs ²	Gross value of bullion, ore, concentrates or residues shipped from mines ³	Net value of bullion, ore, concentrates or residues shipped from mines ³
			\$	\$	\$	\$	\$	\$	\$
Nova Scotia.....	1	1	835	—	—	17	—	1,515	1,498
Quebec.....	25	4,480	11,072,341	1,572,326	3,973,267	161,030	337,378	21,351,998	15,307,997
Ontario.....	49	13,914	36,872,660	3,792,101	12,455,245	137,358	508,991	72,607,828	55,714,133
Manitoba.....	3	408	955,696	172,866	258,547	7,962	57,772	2,208,978	1,711,831
British Columbia.....	19	1,785	4,983,794	539,611	1,827,835	294,730	225,383	8,927,221	6,039,662
Northwest Territories.....	4	737	2,435,742	524,616	555,546	7,973	20,179	3,566,542	2,458,228
Canada, 1948.....	101	21,325	56,321,068	6,601,520	19,070,440	609,053	1,149,720	108,664,082	81,233,349
Canada, 1947.....	104	20,229	47,881,992	6,221,601	16,577,722	469,569	948,134	96,126,278	71,909,252
Canada, 1946.....	88	18,790	40,353,652	5,596,595	13,560,586	305,807	1,112,944	88,422,683	67,846,751

1. Explosives, etc.

2. Includes handling charges.

3. Value of bullion produced plus value of ore, concentrates, etc., shipped.

TABLE 58. Ores Mined and Milled, Crude Bullion Recovered and Crude Bullion and Concentrates Shipped in the Auriferous Quartz Mining Industry, 1947

	Nova Scotia	Quebec	Ontario	Manitoba	British Columbia	Northwest Territories and Yukon	Canada
Number of producing mines.....	3	24	51	3	19	4	104
Ore mined..... ton	1,724	2,873,818	7,823,580	138,588	661,248	133,883	11,632,841
Material discarded (sorted)..... ton	50	31,222	151,388	418	19,528	2,644	205,250
Ore milled (ground, etc.)..... ton	1,674	2,707,950	7,676,178	138,188	641,440	131,180	11,296,610
Tailings re-treated..... ton	—	—	1,376	—	—	—	1,372
Gold content of ores, slags, residues and concentrates shipped:							
To foreign smelters..... fine oz.	—	—	5,378	—	97,174	—	102,552
To Canadian smelters..... fine oz.	108	24,076	1,613	—	478	—	26,275
Bullion bars shipped:							
Gold content..... fine oz.	748	483,951	1,784,192	42,325	126,303	59,402	2,496,921
Silver content..... fine oz.	30	109,391	435,037	6,486	25,392	15,883	592,219
Bullion produced by amalgamation..... crude oz.	805	14,054	226,992	5,388	65,009	16,350	328,598
Bullion produced by cyanidation..... crude oz.	—	590,279	2,145,871	55,895	162,507	65,159	3,019,711
Total Bullion Produced..... crude oz.	805	604,333	2,372,863	61,283	227,516	81,509	3,348,309
Content of bullion bars produced:							
Gold..... fine oz.	748	465,147	1,893,575	42,325	126,303	62,491	2,590,589
Silver..... fine oz.	30	103,974	340,765	6,486	25,392	16,535	493,182
Gold value (standard)..... \$	15,454	9,615,442	39,143,788	874,943	2,620,884	1,291,809	53,562,320
Silver value..... \$	22	74,861	235,505	4,647	18,204	11,829	345,068
Exchange premium on bullion bars produced..... \$	10,696	6,664,703	27,131,805	606,445	1,799,540	895,364	37,108,553
Value of ores, concentrates, slags and residues sold (shipped)..... \$	3,818	909,105	451,476	—	3,745,938	—	5,110,337
Total Gross Value of Production...	\$ 29,990	17,264,111	66,962,574	1,486,035	8,184,566	2,199,002	96,126,278
Value of fuel, electricity and process supplies used, also freight on shipments, marketing, smelter and refinery charges..... \$	6,611	5,561,985	16,268,976	511,765	3,153,356	895,635	26,398,328
Net Value of Production..... \$	23,379	11,702,126	50,693,598	974,270	5,031,210	1,303,367	69,727,950

TABLE 59. Ores Mined and Milled, Crude Bullion Recovered and Crude Bullion and Concentrates Shipped in the Auriferous Quartz Mining Industry, 1948

	Nova Scotia	Ontario	Quebec	Manitoba	British Columbia	Northwest Territories and Saskatchewan	Canada
Number of producing mines	1	25	49	3	19	4	101
Ore mined..... ton	-	3,823,767	8,694,110	194,672	678,902	239,254	13,630,705
Material discarded (sorted)..... ton	-	64,620	126,134	1,107	25,674	6,839	224,374
Ore milled (ground, etc.)..... ton	-	3,499,479	8,527,432	190,793	652,631	239,936	13,110,271
Tailings re-treated..... ton	-	-	-	-	537	-	537
Gold content of ores, slags, residues and concentrates shipped:							
To foreign smelters..... fine oz.	-	-	10,274	-	99,198	-	109,472
To Canadian smelters..... fine oz.	-	29,396	2,649	-	2,004	-	34,049
Bullion bars shipped:							
Gold content..... fine oz.	43	564,558	2,063,999	62,188	152,469	100,388	2,943,645
Silver content..... fine oz.	4	123,984	387,708	8,972	33,850	25,127	579,645
Bullion produced by amalgamation..... crude oz.	-	13,282	246,234	7,463	-	36,498	-
Bullion produced by cyanidation..... crude oz.	-	746,154	2,315,806	78,642	-	77,863	-
Total Bullion Produced..... crude oz.	-	759,436	2,562,040	86,105	-	114,361	-
Content of bullion bars produced:							
Gold..... fine oz.	43	575,077	2,042,288	62,922	152,469	101,361	2,934,160
Silver..... fine oz.	4	123,678	408,366	9,025	33,850	25,340	600,263
Gold value (standard)..... \$	893	11,887,858	42,217,893	1,300,730	3,151,805	2,095,320	60,654,499
Silver value..... \$	3	92,249	304,890	6,679	25,093	18,902	447,816
Exchange premium on bullion bars produced..... \$	619	8,239,867	29,262,196	901,569	2,184,476	1,452,320	42,041,047
Value of ores, concentrates, slags and residues sold (shipped)..... \$	-	1,132,024	822,849	-	3,565,847	-	5,520,720
Total Gross Value of Production... \$	1,515	21,351,998	72,607,828	2,208,978	8,927,221	3,566,542	108,664,082
Value of fuel, electricity and process supplies used, also freight on shipments, marketing, smelter and refinery charges..... \$	286	6,413,148	17,183,313	649,973	2,896,541	1,134,309	28,277,570
Net Value of Production..... \$	1,229	14,938,850	55,424,515	1,559,005	6,030,680	2,432,233	80,386,512

TABLE 60. Ores, Concentrates, Slags, etc., Shipped to Smelters From Canadian Gold Mines, 1939-1948

Year	Ores		Concentrates		Slags, residues, precipitates	
	Tons	Gold content fine oz.	Tons	Gold content fine oz.	Tons	Gold content fine oz.
To Canadian Plants						
1939	271,666	47,114	4,747	24,184	797	4,507
1940	201,941	34,315	4,485	13,532	158	3,761
1941	202,943	38,380	1,628	7,492	369	4,444
1942	280,978	38,492	2,555	7,307	137	2,831
1943	268,334	36,429	4,490	12,335	311	2,069
1944	205,379	26,535	4,835	11,900	143	1,858
1945	177,099	26,834	5,474	13,903	647	1,832
1946	146,075	19,532	5,155	10,646	314	2,359
1947	146,469	19,001	2,538	5,313	296	1,961
1948	223,834	28,997	630	2,192	248	2,860
To Foreign Plants						
1939	3,853	8,930	39,530	112,126	235	26,631
1940	7,453	8,107	44,570	125,704	103	47,160
1941	7,453	11,222	43,855	122,619	115	56,183
1942	1,356	1,020	40,428	126,931	68	55,999
1943	-	-	20,615	59,949	40	34,704
1944	-	-	20,755	54,233	73	35,955
1945	109	185	19,596	49,193	47	44,559
1946	-	-	11,969	49,164	25	9,650
1947	-	-	25,765	67,929	32	34,572
1948	289	6,400	24,446	64,531	36	44,795

TABLE 61. Shipments from Auriferous Quartz Mines, 1945-1948

	Quantity	Total Gross Metal Content					
		Gold	Silver	Copper	Lead	Zinc	Other
	tons	oz.	oz.	lb.	lb.	lb.	lb.
1945							
To Canadian Smelters:							
Gold ore.....	177,099	26,834	608	—	5,596	16,676	—
Gold concentrates.....	5,474	13,903	5,948	975,598	—	—	—
Slags, precipitates, residues.....	647	1,832	1,577	862	—	—	—
Arsenical material.....	366	—	—	—	—	—	366 ¹
To Foreign Smelters:							
Gold ore.....	109	185	54	1,518	—	—	—
Gold concentrates.....	18,510	49,094	94,979	239,943	2,697,977	—	—
Lead concentrates.....	752	99	56,083	—	668,762	—	—
Slags, precipitates, etc.....	47	44,559	629,561	—	—	—	—
Arsenical material.....	604	—	—	—	—	—	604 ¹
Total.....	203,942²	136,506	788,810	1,217,921	3,372,335	254,475³	—
1946							
To Canadian Smelters:							
Gold ore.....	146,075	19,532	1,625	—	14,504	13,791	—
Gold concentrates.....	5,155	10,646	5,154	894,661	—	—	—
Slags, precipitates, residues.....	314	2,359	3,824	1,400	—	—	—
Arsenical material.....	282	—	—	—	—	—	210 ¹
To Foreign Smelters:							
Gold concentrates.....	11,334	49,038	45,584	52,022	1,232,906	—	—
Slags, precipitates, etc.....	25	9,650	448,920	—	—	—	—
Lead concentrates.....	587	126	58,946	—	699,244	—	—
Zinc concentrates.....	48	—	—	—	—	42,628	—
Total.....	163,820	91,351	564,053	948,083	1,946,654	56,419	—
1947							
To Canadian Smelters:							
Gold ore.....	146,469	19,001	1,284	—	12,082	13,423	—
Gold concentrates.....	2,538	5,313	3,286	375,094	1,694	368	—
Slags, precipitates, residues.....	296	1,961	23,165	5,001	—	—	—
Arsenical material.....	415	—	—	—	—	—	337 ¹
To Foreign Smelters:							
Gold concentrates.....	25,765	67,929	77,979	124,952	2,314,469	—	—
Slags, precipitates, etc.....	32	34,572	223,592	—	—	—	—
Lead concentrates.....	258	51	23,261	—	297,647	—	—
Total.....	175,773	128,827	353,567	505,047	2,625,892	13,791	—
1948							
To Canadian Smelters:							
Gold ore.....	223,834	28,997	1,253	—	216	310	—
Gold concentrates.....	630	2,192	1,327	—	8,897	2,087	—
Slags, precipitates, residues.....	248	2,860	17,707	—	—	—	—
Arsenical material.....	460	—	—	—	—	—	383 ¹
To Foreign Smelters:							
Gold concentrates.....	24,172	64,461	14,407	213,035	—	—	—
Slags, precipitates, residues.....	36	44,795	368,081	—	—	—	—
Gold ore.....	289	146	1,743	—	—	—	—
Lead concentrates.....	274	70	40,131	—	355,570	—	—
Total.....	249,943	143,521	444,649	213,035	364,683	2,397	—

1. Tons of arsenious oxide.

2. Includes 334 tons zinc concentrates.

3. Includes metal content of zinc concentrates.

TABLE 62. Certain Data Relating to the Production of Gold by the Entire Auriferous Quartz Mining Industry 1939-1948 (Averages)

Year	Ounces of gold produced per wage-earner year	Cost of fuel and electricity per ounce of gold produced	Cost of wages per ounce of gold produced	Cost of explosives and other process supplies used per ounce of gold produced	Cost of freight and smelter refinery treatment on ores and bullion shipped per ounce of gold produced	Taxes per ounce gold produced	Total of specified costs
	ounces	\$	\$	\$	\$	\$	\$
1939.....	157	1.81	10.69	4.45	0.67	—	17.62
1940.....	161	1.76	10.48	4.49	0.69	—	17.42
1941.....	155	1.82	11.56	4.53	0.77	—	18.68
1942.....	176	1.84	11.47	4.34	0.75	—	18.40
1943.....	176.7	2.12	11.47	4.24	0.69	4.89	23.41
1944.....	159	2.43	12.81	4.60	0.81	4.15	24.80
1945.....	140	2.45	14.08	5.09	0.74	3.74	26.10
1946.....	122	2.63	16.77	6.05	0.59	3.08	29.12
1947.....	132	2.62	17.28	6.56	0.52	1.93	28.91
1948.....	151	2.27	16.82	6.35	0.57	1.47	27.48

Note: The data contained in the foregoing table have been compiled from reports received from both producing and non-producing (exploring and developing) operators in the auriferous quartz mining industry. This fact should be noted if the information is to be construed or employed as possible criteria for technological or other statistical study. The trends revealed are not to be interpreted as entirely reflecting "Cause and effect" in the operation of producing mines only, but rather as indices of change in the industry as a whole. For data relating to producers only, see Table 63.

TABLE 63. Certain Data (Averages) Relating to the Total Production of Gold by Producers Only in the Auriferous Quartz Mining Industry, 1939-1948

Year	Ounces of gold produced per wage-earner year	Cost of fuel and electricity per ounce of gold produced	Cost of wages per ounce of gold produced	Cost of explosives and other process supplies used per ounce of gold produced	Cost of freight and smelter refinery treatment on ores and bullion shipped per ounce of gold produced	Taxes per ounce gold produced	Total of specified costs
	ounces	\$	\$	\$	\$	\$	\$
1939.....	164	1.76	10.25	4.33	0.67	—	17.01
1940.....	165	1.72	10.20	4.41	0.69	—	17.02
1941.....	158	1.79	11.37	4.46	0.77	—	18.39
1942.....	177	1.83	11.41	4.33	0.75	—	18.32
1943.....	177	2.12	11.42	4.25	0.69	4.89	23.35
1944.....	163	2.41	12.59	4.57	0.81	4.12	24.50
1945.....	151	2.34	13.17	4.97	0.74	3.68	24.90
1946.....	141	2.35	14.38	5.69	0.59	2.99	26.00
1947.....	148	2.29	15.20	6.10	0.52	1.86	25.97
1948.....	159	2.14	16.00	6.20	0.57	1.41	26.32

TABLE 64. Principal Statistics Relative to all Ontario Gold Mines, by Areas¹, 1946-1948

Camp or district	Number of producers	Ore treated ²	Total gold recovered	Average ounces per ton recovered	Employees	Salaries and wages paid	Cost of fuel, electricity and process supplies
	No.	tons	fine oz.		No.	\$	\$
1946							
Porcupine.....	15	3,955,153	904,797	.23	7,362	15,343,070	6,210,283
Kirkland Lake.....	9	1,077,790	403,589	.37	2,806	5,950,431	2,620,709
Larder Lake.....	3	862,078	145,329	.17	879	1,848,871	1,086,520
Matachewan.....	2	431,509	42,702	.10	290	606,113	494,898
Sudbury.....	—	—	—	—	83	172,439	15,546
Thunder Bay.....	6	384,521	106,509	.28	934	1,981,239	1,057,250
Rainy River and Kenora.....	—	—	—	—	37	68,850	2,365
Patricia.....	8	555,745	158,122	.28	1,659	3,893,336	1,686,116
Total.....	43	7,266,796	1,761,048	.24	14,050	29,864,349	13,173,687
1947							
Porcupine.....	17	3,926,588	937,415	.24	7,248	16,899,928	7,879,487
Kirkland Lake.....	10	1,092,316	438,933	.40	2,846	6,716,696	2,802,693
Larder Lake.....	4	1,109,513	188,158	.17	1,077	2,415,848	1,230,009
Matachewan.....	3	503,563	52,175	.10	315	682,677	537,192
Sudbury.....	—	25,743	4,731	.18	239	562,611	137,989
Thunder Bay.....	7	437,692	116,944	.27	1,056	2,574,359	1,174,518
Rainy River and Kenora.....	1	800	231	.29	75	133,385	36,182
Patricia.....	9	579,963	161,979	.28	1,718	4,495,238	1,928,036
Total.....	51	7,676,178	1,900,566	.25	14,574	34,478,742	15,726,106
1948							
Porcupine.....	18	4,345,691	998,838	.23	7,272	18,966,279	8,540,188
Kirkland Lake.....	9	1,180,044	447,888	.38	2,862	7,530,556	2,940,959
Larder Lake.....	3	1,200,275	204,144	.17	1,028	2,826,519	1,130,730
Matachewan.....	3	506,761	48,994	.10	291	772,057	681,547
Sudbury.....	—	100,072	23,974	.24	220	591,640	377,674
Thunder Bay.....	6	409,736	112,351	.27	888	2,371,402	993,605
Rainy River and Kenora.....	—	—	—	—	—	—	—
Patricia.....	10	784,853	219,204	.28	1,792	4,997,613	1,872,261
Total.....	49	8,527,432	2,055,393	.24	14,353	38,056,266	16,536,964

1. Includes data for all active properties.

2. Does not include low grade discarded by sorting, but includes crude ore milled and smelted.

TABLE 65. Ores Mined and Treated by Auriferous Quartz Mining Industry, 1939-1948

Year	Ore hoisted	Ore milled ¹	Crude ore shipped to smelters ²	Low-grade sorted out	Tailings re-treated	Gold recovered as bullion	Gold in crude ore shipped	Gold in concentrates, slag, etc., shipped
	tons	tons	tons	tons	tons	fine oz.	fine oz.	fine oz.
1939.....	17,105,744	16,150,173	275,519	660,578	18,426	4,160,352	56,044	167,448
1940.....	18,986,306	18,083,439	209,394	757,538	180,311	4,386,673	42,422	190,157
1941.....	20,031,736	19,026,273	210,396	936,003	480,289	4,405,986	49,602	190,738
1942.....	17,722,866	16,820,442	282,334	658,439	5,176	3,898,999	39,512	193,068
1943.....	12,853,610	12,206,518	268,334	361,522	29,716	2,869,635	36,429	109,055
1944.....	10,790,495	10,330,899	205,379	234,820	18,233	2,300,090	26,535	103,946
1945.....	9,780,555	9,437,796	177,208	136,328	—	2,068,910	27,019	109,487
1946.....	10,712,615	10,306,720	146,075	229,237	—	2,289,647	19,532	71,819
1947.....	11,632,841	11,296,610	146,469	205,250	1,376	2,590,589	19,001	109,826
1948.....	13,630,705	13,110,271	224,123	224,374	537	2,934,160	29,143	114,378

1 + 2 = total crude ore treated.

TABLE 66. Gold and Silver Content of Bullion Produced and of Ores, Concentrates, etc., Shipped, with Average Grade of Ore Shipped and Ore Milled at Auriferous Quartz Mines in Canada, with Average Price of Gold and Silver in Canadian Funds, 1939-1948

Year	Tonnage treated ¹	Gold content ²	Silver content ²	Ounces of fine gold per ton	Ounces of fine silver per ton	Average price of gold	Average price of silver
		fine oz.	fine oz.			\$ per oz.	\$ per oz.
1939.....	16,425,692 ³	4,383,844	2,119,708	.27	.13	36.14	0.405
1940.....	18,292,833 ³	4,619,252	2,729,998	.25	.15	38.50	0.382
1941.....	19,236,669 ³	4,646,326	2,773,460	.24	.14	38.50	0.383
1942.....	17,102,776 ³	4,131,579	2,186,369	.24	.13	38.50	0.422
1943.....	12,474,852 ³	3,015,119	1,399,778	.24	.11	38.50	0.452
1944.....	10,536,278 ³	2,430,571	906,788	.23	.09	38.50	0.430
1945.....	9,615,004 ³	2,205,416	1,205,147	.23	.13	38.50	0.47
1946.....	10,452,775 ³	2,380,998	1,025,619	.23	.10	36.75	0.836
1947.....	11,443,079 ³	2,719,416	845,749	.24	.07	35.00	0.72
1948.....	13,334,931 ³	3,077,681	1,044,912	.23	.08	35.00	0.75

1. Does not include tailings re-treated, but includes ore milled plus crude ore shipped to smelters.

2. Relatively small quantity of gold and silver contained in concentrates, slags, etc., shipped and in cyanide solution in circuit may have originated in ores treated during the previous year; from 1937 represents metal content of total bullion produced plus metal in ores or concentrates shipped to smelters

3. Material discarded by sorting not included.

TABLE 67. Milling Capacity of Operating Canadian Gold Mines, 1939-1948 (Tons of 2,000 pounds per 24 hours)

Year	Nova Scotia	Quebec	Ontario	Manitoba	Saskatchewan	British Columbia	Northwest Territories
1939.....	562	9,580	33,324	865	1,000	4,417	—
1940.....	450	11,215	35,030	690	1,200	4,255	275
1941.....	319	12,694	37,416	990	1,355	4,510	510
1942.....	247	14,330	36,135	903	1,202	4,303	710
1943.....	280	13,304	32,555	753	2	2,845	510
1944.....	180	13,059	30,710	550	—	2,650	66
1945.....	187	12,600	30,457	550	—	2,740	417
1946.....	172	12,033	30,370	550	—	3,052	417
1947.....	50	13,010	29,430	550	—	3,235	467
1948.....	—	12,395	29,990	700	—	2,550	1,150

TABLE 68. Specified Costs per ton of Ore Milled at Certain of the Principal Auriferous Quartz Mines, 1948

Name of Mine	Development and exploration ¹	Mining	Milling	General ²	Total before depreciation and taxes	Depreciation	Taxes	Total Costs
(Dollars)								
QUEBEC:								
Belleterre Quebec Mines Ltd.	1.035	5.108	1.350	0.261	7.754	0.811	0.771	9.336
Canadian Malartic Gold Mines Ltd.	0.37	1.58	0.70	0.59	3.24	0.13	0.01	3.38
Consolidated Beattie Mines Ltd.	0.300	2.442	1.047	0.679	4.468	1.211	-	5.679
East Malartic Mines Ltd.	0.606	2.395	0.684	0.746	4.431	0.809	0.112	5.352
Hosco Gold Mines Ltd.	0.706	1.388	1.865	0.998	4.957	-	-	4.957
Lamaque Mining Co. Ltd.	0.64	2.81	0.84	0.16	4.45	0.15	0.66	5.26
Louvicourt Goldfield Corp.	1.295	2.946	1.319	1.236	-	-	-	-
O'Brien Gold Mines Ltd.	1.94	6.24	2.08	3.76	14.02	0.59	0.35	14.96
Perron Gold Mines Ltd.	0.639	3.210	1.112	0.947	5.908	0.231	0.105	6.244
Senator Rouyn Ltd.	0.50	3.21	0.86	0.15	4.72	0.85	0.03	5.60
Sigma Mines (Quebec) Ltd.	0.597	2.735	0.687	0.445	4.464	0.177	0.366	5.007
Siscoe Gold Mines Ltd.	0.901	3.806	1.407	1.619	7.733	0.356	-	-
Sladen Malartic Mines Ltd.	0.685	1.657	0.893	0.450	3.685	0.297	0.035	4.017
Stadacona Mines (1944) Ltd.	0.73	2.54	0.97	0.97	5.21	-	-	5.21
ONTARIO:								
Porcupine District								
Aunor Gold Mines Ltd.	0.96	5.10	1.12	1.45	8.63	0.67	0.53	9.83
Bonetal Gold Mines Ltd.	0.19	1.86	1.52	0.62	4.19	0.48	-	4.67
Brouhan Porcupine Mines Ltd.	0.68	3.60	1.09	0.82	6.29	0.08	0.37	6.74
Buffalo Ankerite Gold Mines Ltd.	1.671	3.804	0.917	0.917	7.649	0.340	-	7.649
Conlaunum Mines Ltd.	1.69	3.86	0.97	1.32	7.84	-	-	7.84
Hallnor Mines Ltd.	1.10	3.50	1.22	1.24	7.06	0.10	1.44	8.60
Hollinger Consolidated (Timmins)	1.001	4.253	0.863	1.089	7.206	0.085	0.304	7.595
Hollinger Consolidated (Ross)	0.906	2.686	1.699	0.820	6.111	0.440	0.173	6.724
Hoyle Mining Co. Ltd.	0.11	1.48	1.32	0.79	3.70	0.42	-	4.12
McIntyre Porcupine Mines Ltd.	0.702	5.744	1.124	0.222	7.792	0.109	0.808	8.709
Pamour Porcupine Mines Ltd.	0.73	1.68	0.63	0.46	3.50	0.16	-	3.66
Porcupine Reef Gold Mines Ltd.	2.28	1.90	1.75	1.70	9.49	-	0.09	9.58
Preston East Dome Mines Ltd.	1.915	4.157	0.804	0.208	7.084	0.150	0.107	7.341
Kirkland Lake District								
Bidgood Kirkland Gold Mines Ltd.	2.002	5.908	1.692	1.292	10.894	0.354	0.020	11.268
Macassa Mines Ltd.	1.299	6.748	1.393	1.653	11.093	0.277	0.679	12.049
Teck-Hughes Gold Mines Ltd.	2.89	7.79	1.89	0.96	13.53	-	0.14	13.67
Upper Canada Mines Ltd.	3	3.76	1.03	1.03	8.10	0.73	0.46	9.29
Wright-Hargreaves Mines Ltd.	2	6.960	1.540	1.821	10.321	0.299	1.466	12.086
Larder Lake District								
Chesterville Mines Ltd.	0.264	1.777	0.711	0.498	3.250	0.222	0.039	3.511
Kerr-Addison Gold Mines Ltd.	0.922	1.596	0.811	0.493	3.822	0.563	0.584	4.969
Thunder Bay District								
Leitch Gold Mines Ltd.	5.12	9.16	3.40	1.23	18.91	2.81	2.20	23.92
Little Long Lac Gold Mines Ltd.	1.35	5.92	2.02	1.65	10.94	0.23	0.18	11.35
McLeod-Cockshutt Gold Mines Ltd.	1.042	3.816	1.871	1.331	8.060	1.358	-	9.418
Magnet Consolidated Mines Ltd.	4.54	7.62	2.56	0.95	15.67	0.65	0.01	16.33
Patricia District								
Cochénoir Willans Gold Mines Ltd.	2.245	3.704	2.297	2.259	10.506	0.915	0.26	11.446
Hasaga Gold Mines Ltd.	0.519	2.796	0.952	0.70	4.967	0.867	0.003	5.837
Madsen Red Lake Gold Mines Ltd.	0.747	2.456	1.068	1.280	5.551	0.804	0.280	6.635
McKenzie Red Lake Gold Mines Ltd.	1.970	4.962	1.569	1.694	10.195	0.395	-	10.590
McMarnac Red Lake Gold Mines Ltd.	0.39	4.03	2.78	3.22	10.42	1.53	3.01	14.96
Pickle Crow Gold Mines Ltd.	0.80	6.11	1.39	1.22	9.52	1.52	0.33	11.47
Starratt Olsen Gold Mines Ltd.	0.47	3.37	1.56	1.40	6.80	-	-	6.80
MANITOBA:								
Ogama-Rockland Gold Mines Ltd.	3.49	3.11	1.66	6.08	14.34	2.67	0.01	17.02
BRITISH COLUMBIA:								
Bralorne Mines Ltd.	1.23	5.99	1.08	3.43	11.73	-	1.28	13.01
Cariboo Gold Quartz Mining Co. Ltd.	1.43	7.60	2.19	0.51	11.73	-	-	11.73
Hedley Mascot Gold Mines Ltd.	1.45	3.90	3.04	4.64	13.03	-	0.04	13.07
Island Mountain Mines Co. Ltd.	3.88	6.39	2.70	0.27	13.24	-	0.05	13.29
Kelowna Exploration Co. Ltd.	0.61	3.35	2.41	3.74	10.11	-	0.50	10.61
Pioneer Gold Mines of B.C. Ltd.	3.96	6.49	2.77	2.73	15.95	-	-	15.95
Polaris-Taku Mining Co. Ltd.	1.17	4.67	1.36	3.20	10.40	-	-	10.40
Privateer Mine Ltd.	1.045	6.977	2.822	3.344	14.188	-	0.104	14.292
Sheep Creek Gold Mines Ltd.	2.78	5.73	2.34	1.61	12.46	-	0.01	12.47
NORTHWEST TERRITORIES:								
Consolidated Mining & Smelting	2.48	6.13	4.71	4.33	17.65	-	-	17.65
Giant Yellowknife Gold Mines Ltd.	1.65	5.21	4.63	5.05	16.54	5.54	-	22.08

1. Exclusive of outside exploration.

2. Marketing, head office, etc. (exclusive of taxes).

3. Included in mining.

TABLE 69. Employees and Salaries and Wages Paid by Entire Auriferous Quartz Mining Industry¹, 1939-1948

Year	Wage- earners	Salaried employees	Total employees		Wages paid	Average per capita wages paid	Salaries paid	Total salaries and wages
	No.	No.	No.		\$	\$	\$	\$
1939.....	27,959	2,663	30,622		46,836,845	1,675	6,369,380	53,206,225
1940.....	28,747	2,658	31,405		48,410,841	1,684	6,794,255	55,205,096
1941.....	29,820	2,731	32,551		54,735,716	1,836	7,415,094	62,150,810
1942.....	23,517	2,513	26,030		47,409,542	2,016	6,979,330	54,388,872
1943.....	17,061	1,977	19,038		34,576,891	2,027	6,088,392	40,665,283
1944.....	15,260	1,966	17,226		31,151,908	2,041	5,871,597	37,023,505
	Workmen	Adminis- trative	Male	Female				
1945.....	15,807	2,581	17,995	393	31,051,187	1,964	6,488,334	37,690,177
1946.....	19,501	2,472	21,631	342	39,967,638	2,050	7,243,424	47,211,062
1947.....	20,647	2,257	22,557	349	47,005,905	2,277	7,606,569	54,612,474
1948.....	20,411	2,155	22,239	327	51,790,681	2,537	7,734,997	59,515,678

1. Including any bonus paid.

TABLE 70. Workmen, by Months, in the Entire Auriferous Quartz Mining Industry, 1944-1948

Month	1944	1945	1946	1947	1948
January.....	15,796	15,222	19,083	20,656	20,867
February.....	16,001	15,137	19,577	20,850	20,559
March.....	16,014	14,887	19,837	20,959	20,387
April.....	15,634	14,573	20,036	20,768	20,211
May.....	15,314	14,624	20,182	20,816	20,203
June.....	15,172	14,873	20,175	20,937	20,530
July.....	15,134	15,082	19,480	20,947	20,637
August.....	14,837	15,249	19,125	20,267	20,312
September.....	14,501	15,746	18,623	19,611	20,031
October.....	14,486	16,988	18,946	19,778	20,276
November.....	14,786	18,110	19,093	20,458	20,464
December.....	14,595	18,170	18,990	20,672	20,315

TABLE 71. Workmen in Producing Lode Gold Mines, by Provinces, 1947 and 1948

Month	Quebec		Ontario		British Columbia		Other districts and provinces		Canada	
	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948
January.....	3,696	3,950	12,927	12,793	1,451	1,942	588	923	18,662	19,608
February.....	3,741	3,976	12,991	12,759	1,457	1,806	609	910	18,798	19,451
March.....	3,716	3,938	12,917	12,674	1,512	1,706	575	912	18,720	19,230
April.....	3,536	3,907	12,897	12,733	1,493	1,606	581	941	18,507	19,187
May.....	3,551	3,896	12,310	12,694	1,615	1,589	547	972	18,523	19,151
June.....	3,320	4,011	12,864	12,922	1,684	1,573	523	1,009	18,391	19,515
July.....	3,352	4,062	12,759	12,944	1,731	1,540	516	1,071	18,358	19,617
August.....	3,296	4,075	12,223	12,732	1,732	1,463	536	1,070	17,787	19,340
September.....	3,237	4,132	11,802	12,557	1,790	1,413	443	1,047	17,272	19,149
October.....	3,228	4,201	11,872	12,670	1,954	1,492	467	1,017	17,521	19,380
November.....	3,506	4,266	12,216	12,858	2,113	1,528	485	982	18,320	19,634
December.....	3,665	4,172	12,469	12,908	2,139	1,477	490	998	18,763	19,555

TABLE 72. Classification of Workmen Employed in Entire Auriferous Quartz Mining Industry, 1947 and 1948

Province	1947				1948				
	Mine			Mill	Mine			Mill	
	Surface		Under-ground		Surface		Under-ground		
	Male	Female	Male		Male	Female	Male	Male	Female
Nova Scotia.....	7	—	6	1	5	—	—	—	—
Quebec.....	1,462	35	2,483	307	1,260	43	2,706	387	—
Ontario.....	3,914	75	8,290	1,007	3,635	48	8,444	1,015	—
Manitoba.....	325	10	164	15	313	12	250	23	—
Saskatchewan.....	—	—	—	—	2	—	—	—	—
British Columbia.....	569	49	1,022	197	386	29	1,004	199	1
Northwest Territories.....	411	16	221	52	325	14	260	50	—
Yukon.....	4	—	5	—	—	—	—	—	—
Canada.....	6,692	185	12,191	1,579	5,926	146	12,664	1,674	1

TABLE 73. Cost of Prospecting Conducted by Canadian Auriferous Quartz Mining Companies, 1947 and 1948

Province prospecting was conducted in ¹	By Nova Scotia and Quebec companies ²	By Ontario companies ²	By Manitoba companies ²	By British Columbia companies ²	By Yukon and Northwest Territories companies	Total
(Dollars)						
1947						
Nova Scotia.....	169	842	—	—	—	1,011
Quebec.....	1,104,930	140,867	—	9,668	9,752	1,265,217
Ontario.....	98,313	1,066,083	34,482	13,429	30,114	1,242,421
Manitoba.....	10,374	47,373	332,882	26,344	8,176	425,149
Saskatchewan.....	—	—	—	—	—	—
British Columbia.....	103,529	136,424	—	332,116	988	573,057
Northwest Territories.....	8,565	10,859	—	—	—	574,205
Yukon.....	27,302	71,070	—	4,877	554,781	103,249
Total Canada.....	1,353,182	1,473,518	367,364	386,434	603,811	4,184,309
1948						
Nova Scotia.....	—	—	—	—	—	—
Quebec.....	1,158,348	186,149	—	—	—	1,344,497
Ontario.....	210,316	469,614	32,334	9,000	688	721,952
Manitoba.....	10,249	19,196	62,222	2,000	457	94,124
Saskatchewan.....	—	1,006	2,000	—	—	3,006
British Columbia.....	53,676	40,114	—	220,066	2,193	316,049
Northwest Territories.....	1,075	8,740	—	—	4,263	14,078
Yukon.....	—	2,676	—	—	—	2,676
Total Canada.....	1,433,664	727,495	96,556	231,066	7,601	2,496,382

1. Prospecting includes the search for new mineral deposits on the surface, and preliminary exploration.
 2. Province in which the companies' principal operations are conducted.

TABLE 74. Specified Taxes Paid by Active Canadian Auriferous Quartz Mines in 1947 and 1948, by Provinces¹

Nature of tax	Nova Scotia	Quebec	Ontario	Manitoba	British Columbia	Northwest Territories	Canada
(Dollars)							
1947							
Dominion Income Tax, including tax on non-operating revenue.....	—	257,389	2,254,793	132,443	168,339	—	2,812,964
Dominion Excess Profits Tax.....	—	116,757	816,582	29,732	—	—	963,071
Provincial Taxes.....	799	214,627	701,619	940	106,839	2,532	1,027,356
Municipal Taxes.....	269	180,301	242,514	37	17,441	9,638	450,200
Total.....	1,068	769,074	4,015,508	163,152	292,619	12,170	5,253,591
1948							
Dominion Income Tax, including tax on non-operating revenue.....	—	346,405	2,050,506	72,688	194,666	—	2,664,265
Dominion Excess Profits Tax.....	—	22,551	38,900	—	—	—	61,451
Provincial Taxes.....	45	225,379	936,064	42,680	92,491	7,581	1,304,260
Municipal Taxes.....	42	206,632	275,688	17	15,265	10,104	507,748
Total.....	87	800,967	3,301,158	115,385	302,422	17,685	4,537,724

1. Does not include complete data relating to taxes that may have been paid by dormant firms.

TABLE 75. Certain Specified Expenditures Made by Auriferous Quartz Mining Companies, 1945-1948

Province and year	Workmen's compensation	Silicosis assessment	Unemployment insurance	Aggregate cost of all supplies purchased	Aggregate cost of plant and equipment purchased	Cost of build- ings, machinery and equipment erected or installed
(Dollars)						
Nova Scotia:						
1945.....	4,309	-	1,191	21,732	6,204	200
1946.....	3,044	-	1,187	43,109	6,855	3,664
1947.....	773	-	148	-	-	-
1948.....	72	-	42	5,524	3,000	15,330
Quebec:						
1945.....	333,339	446	52,076	4,873,803	840,504	1,166,339
1946.....	577,507	574	60,671	7,127,669	2,195,574	4,373,899
1947.....	519,160	377	60,193	6,956,376	2,589,318	2,977,861
1948.....	584,149	571	69,114	6,660,647	1,828,003	2,669,943
Ontario:						
1945.....	645,288	288,470	142,803	12,172,411	702,336	1,171,712
1946.....	856,306	329,442	175,822	18,785,560	2,312,524	4,086,869
1947.....	974,440	381,626	169,056	19,987,340	3,599,256	6,023,438
1948.....	1,143,732	400,460	194,526	22,727,089	3,427,792	6,991,532
Manitoba:						
1945.....	15,743	3,487	2,972	296,102	40,792	45,927
1946.....	27,429	6,291	4,275	783,824	1,060,318	403,590
1947.....	50,590	11,902	6,352	1,665,327	1,671,166	2,800,511
1948.....	63,644	5,676	8,761	2,018,984	1,151,957	2,689,301
Saskatchewan:						
1945.....	587	-	284	2,160	16,598	11,237
1946.....	44	-	34	-	674	-
1947.....	-	-	-	-	-	-
1948.....	712	-	48	3,735	-	1,016
British Columbia:						
1945.....	118,157	93,523	15,325	1,266,627	171,105	315,528
1946.....	129,471	106,968	15,448	1,965,146	708,065	661,426
1947.....	200,873	179,349	28,667	2,625,108	634,439	847,746
1948.....	202,498	177,970	22,008	2,395,862	393,526	351,872
Northwest Territories:						
1945.....	16,854	43	3,679	611,511	164,474	344,443
1946.....	36,692	257	6,661	1,398,783	233,517	666,492
1947.....	37,991	200	5,140	2,236,264	897,153	1,364,263
1948.....	34,539	-	5,066	1,981,168	647,347	1,668,576
Yukon:						
1945.....	1,014	690	16	2,822	-	-
1946.....	-	-	-	-	-	-
1947.....	1,318	-	123	69,826	45,012	116,279
1948.....	-	-	-	-	-	-
Canada:						
1945.....	1,135,291	386,659	218,346	19,247,168	1,942,011	3,055,386
1946.....	1,630,493	443,532	264,098	30,104,091	6,517,527	10,195,940
1947.....	1,785,145	573,454	269,679	33,540,241	9,436,344	14,130,098
1948.....	2,029,346	584,677	299,565	35,793,009	7,451,625	14,387,570

THE COPPER-GOLD-SILVER MINING INDUSTRY

The mining of "copper-gold-silver" ores in Canada during 1948 was confined to the provinces of Quebec, Ontario, Manitoba, Saskatchewan and British Columbia. It is to be noted that in addition to the copper recovered from ores of this type there is a very large quantity of the metal obtained in the smelting and refining of the copper-nickel ores mined in the Sudbury area of Ontario; important quantities of gold and silver are also being extracted from these copper-nickel ores. General statistics relating to labour, etc., in the nickel-copper industry are not included in this report.

Mining operations conducted on Canadian copper-gold-silver deposits (sulphides) during 1948 were reported by 35 firms, of which 11 were producers. The gross value of crude ore, concentrates, etc., shipped from the mines and mills to the smelters was estimated at \$107,831,148, the cost of fuel, purchased electricity, process supplies, freight and treatment totalled \$22,178,942, and the net value of shipments was computed at \$85,652,206. Employees totalled 6,401 compared with 5,220 in 1947 and 4,958 in 1946.

The gross value of ores shipped by firms which both mine and smelt their own ores is sometimes not reported. This necessitates considerable estimating in determining gross and net values for mine shipments. However, possible abnormal evaluations resulting from this are largely compensated for in determining the value added at the smelters and refineries. This added value is credited to the non-ferrous smelting and refining industry and is also included in the total net value of production of the entire Canadian mining industry. This fact should be noted in making any statistical study of the annual production values shown for shipments from copper-gold-silver mines.

The statistics as herein shown under the copper-gold-silver mining industry refer only to mines and mills and are not inclusive of data pertaining to the operation of smelters and refineries. Statistics relating to the reduction of non-ferrous ores are recorded under the non-ferrous smelting and refining industry.

TABLE 76. Principal Statistics¹ of the Copper-Gold-Silver Mining Industry for Specified Years

Year	Number of active operators ²	Number of operating plants or mines ²	Capital employed ²	Number of employees ²	Salaries and wages ²	Cost of fuel and electricity ²	Value of ores and concentrates shipped by mines
			\$		\$	\$	\$
1939.....	28	30	58,867,620	6,083	9,920,591	1,223,523	26,182,577
1940.....	25	26	60,446,948	6,115	10,777,827	1,297,454	25,804,419
1941.....	21	22	81,521,902	5,866	10,695,023	1,264,567	30,220,331
1942.....	26	28	84,776,243	5,646	11,097,412	1,338,737	33,688,642
1943.....	20	22	94,750,186	5,748	11,806,827	1,426,710	43,840,679
1944.....	23	26	3	5,175	10,710,071	1,402,243	38,198,039
1945.....	38	41	3	4,658	9,663,612	1,175,916	38,165,269
1946.....	42	44	3	4,958	10,244,487	1,152,925	37,433,982
1947.....	31	32	3	5,220	13,149,093	1,361,890	52,173,584
1948.....	35	37	3	6,401	17,919,526	1,706,874	85,652,206

Note. The cost of fuel, purchased electricity and process supplies was deducted; however, values are less freight and estimated treatment charges. Also, value of ores and concentrates shipped from mines to smelters operated by the same companies are often of a nominal or conjectural nature.

1. Data relating to idle mines and smelters not included.

2. Not including data relating to any Rossland properties leased by Consolidated Mining and Smelting Co. of Canada, Ltd.

3. Not reported.

TABLE 77. Shipments from Copper-Gold-Silver Mines, 1947 and 1948

	Quantity	Value	Total metal content as determined by settlement assay ¹				
			Gold	Silver	Copper	Sulphur	Zinc
	tons	\$	fine oz.	fine oz.	pounds	tons	pounds
1947							
To CANADIAN PLANTS ²							
Ores.....	348,382	7,249,636	59,304	187,981	26,006,346	-	-
Copper concentrates.....	591,723	38,335,817	156,875	2,311,980	165,940,219 ₃	-	4,267,104
Zinc concentrates.....	141,232	11,518,874	6,737	188,548	10,612 ₃	-	127,932,850
Iron pyrites concentrates.....	34,759	79,463	-	-	-	15,928	-
Slags, residues, gold precipitates and bullion.....	330	845,107	18,869	179,197	276,372	-	-
To FOREIGN PLANTS							
Ores.....	164	2,638	3	214	14,476	-	-
Copper concentrates.....	79,203	8,811,273	15,160	227,184	37,525,152	-	366,234 ₃
Zinc concentrates.....	39,883	2,955,750	-	-	-	-	41,459,863
Iron pyrites concentrates.....	95,798	270,488	-	-	-	44,635	-
Precipitates.....	950	229,647	-	-	1,066,747	-	-
Total.....	1,332,424	70,298,693	256,948	3,095,104	230,829,312	60,563	173,659,817
Value of process supplies, etc. ⁴	-	18,125,109	-	-	-	-	-
Net value.....	-	52,173,584	-	-	-	-	-
1948							
To CANADIAN PLANTS ²							
Ores.....	414,205	6,998,305	75,725	169,948	19,281,789	-	-
Copper concentrates.....	640,950	60,343,052	204,435	2,868,163	189,439,916	-	365,355
Zinc concentrates.....	170,496	22,109,074	7,979	211,152	1,360,018	-	156,164,272
Iron pyrites concentrates.....	80,428	167,795	-	-	-	38,782	-
Slags, residues, bullion and gold precipitates.....	4,390	1,025,553	22,607	212,115	395,409	-	-
To FOREIGN PLANTS							
Ores.....	-	-	-	-	-	-	-
Copper concentrates.....	87,944	10,539,594	19,304	249,008	42,633,532	-	-
Zinc concentrates.....	58,113	6,221,941	-	-	-	-	60,484,677
Iron pyrites concentrates.....	103,642	245,193	-	-	-	48,344	-
Precipitates.....	705	180,641	-	-	811,129	-	-
Total.....	1,560,873	107,831,148	330,050	3,710,366	253,921,793	87,126	217,014,304
Value of process supplies, etc. ⁴	-	22,178,942	-	-	-	-	-
Net value.....	-	85,652,206	-	-	-	-	-

1. In addition, cadmium, tellurium and selenium are recovered from these ores.

2. Certain mines, sometimes operated in Rossland area by several leasees, are usually treated, statistically, as one mine.

3. Includes freight on ore shipments, smelter charges and purchased electricity.

4. Lead (pounds).

TABLE 78. Ores Mined, Milled, and Concentrates Produced by the Copper-Gold-Silver Mining Industry, 1939-1948

Year	Ore mined	Ore milled	Copper concentrates produced ¹	Zinc concentrates produced	Iron pyrites concentrates produced	Net value of all estimated mine and mill shipments ²
	tons	tons	tons	tons	tons	\$
1939.....	8,474,855	7,760,725	828,963	105,842	161,238	32,991,716 ³
1940.....	8,931,291	8,325,979	930,622	126,346	172,500	34,914,051 ³
1941.....	9,263,071	8,402,656	974,250	187,622	309,050	36,990,853 ³
1942.....	8,575,626	7,816,813	858,580	264,739	219,874	40,730,834 ³
1943.....	8,251,579	7,482,831	914,360	315,670	292,007	50,774,104 ³
1944.....	7,395,608	6,873,542	870,726	276,737	257,423	44,770,863 ³
1945.....	5,914,580	5,441,121	730,724	229,980	228,618	44,258,780 ³
1946.....	5,009,490	4,606,503	661,554	219,985	201,873	42,609,415 ³
1947.....	5,462,233	5,140,376	662,088	185,630	178,263	58,198,612 ³
1948.....	6,496,499	6,061,132	724,066	232,131	184,069	91,403,196 ³

1. Exclusive of copper precipitate 1943-1948.

2. Includes the value of any cyanide precipitate shipped from mills to smelters.

3. Gross value reported by operators less only freight and treatment costs deducted by Dominion Bureau of Statistics.

TABLE 79. Ore Reserves of Specified Copper-Gold-Silver Mining Companies¹

	Tons	Copper	Zinc	Gold	Silver
		per cent	per cent	ounces per ton	ounces per ton
Noranda Mines Ltd., January 1, 1949:					
Indicated above the 2,975 foot level:					
Sulphide ore over 4 per cent copper.....	4,528,000	7.16	-	0.161	-
Sulphide ore under 4 per cent copper.....	14,000,000	0.67	-	0.195	-
Silicious fluxing ore.....	957,900	0.09	-	0.121	-
Capacity of mill: 24 hours.....	3,000	-	-	-	-
Waite Amulet Mines Ltd., December 31, 1948:					
"P" orebody.....	50,000	2.5	7.0	0.01	1.01
"C" shaft orebodies.....	50,000	2.0	6.0	0.02	2.5
Amulet Dufault:					
Lower "A" orebody.....	1,251,204	5.67	4.06	0.045	1.5
Upper "A" orebody.....	113,200	1.8	6.5	0.07	1.6
Capacity of mill: 24 hours.....	1,800	-	-	-	-
Normetal Mining Corp. Ltd., December 31, 1948:					
No. 2 orebody.....	1,557,100	3.64	7.15	-	-
No. 3 orebody.....	68,800	0.55	16.71	-	-
Capacity of mill: 24 hours.....	750	-	-	-	-
Sherritt Gordon Mines Ltd., December 31, 1948:					
West orebody.....	762,100	2.55	1.99	0.022	0.63
Capacity of mill: 24 hours.....	750	-	-	-	-
Hudson Bay Mining & Smelting Co. Ltd., January 1, 1948:					
Ore reserves.....	22,700,000	3.0	4.3	0.084	1.20
Capacity of mill: 24 hours.....	6,100	-	-	-	-
Granby Cons. Mining, Smelting & Power Co. Ltd., 1948:					
Ore reserves.....	7,606,000	1.2	-	-	-
Britannia Mining & Smelting Co. Ltd. :					
Capacity of mill: 24 hours.....	6,500	-	-	-	-
East Sullivan Mines Ltd., 1948:					
Ore reserves.....	4,372,000	2.12	1.36	0.023	0.46
Capacity of mill: 24 hours.....	2,000	-	-	-	-
Queмонт Mining Corp. Ltd., 1948:					
Ore reserves.....	9,431,000	1.49	2.69	0.174	0.943
Capacity of mill.....	2,000	-	-	-	-
Cuprus Mines Ltd., December, 1948:					
Ore reserves.....	280,000	3.87	7.3	0.049	0.99
Capacity of mill: 24 hours.....	300	-	-	-	-

1. Subject to revision.

TABLE 80. Specified Data Relating to the Copper-Gold-Silver Mining Industry, 1939-1948¹

Year	Wage-earners	Wages paid	Average per capita wages paid ²	Salaried employees	Salaries paid	Total salaries and wages
	No.	\$	\$	No.	\$	\$
PRODUCING MINES:						
1939.....	5,401	8,498,360	1,573	470	1,126,561	9,624,921
1940.....	5,605	9,434,060	1,683	479	1,313,509	10,747,569
1941.....	5,324	9,249,863	1,737	524	1,428,993	10,678,856
1942.....	4,945	9,442,054	1,909	608	1,524,584	10,966,638
1943.....	5,042	9,931,712	1,970	629	1,764,200	11,695,912
1944.....	4,539	8,927,879	1,967	602	1,721,494	10,649,373
1945.....	3,936	7,788,083	1,979	583	1,608,225	9,396,308
1946.....	4,105	7,865,062	1,916	531	1,656,938	9,522,000
1947.....	4,172	10,103,497	2,422	605	1,917,732	12,021,229
1948.....	4,930	13,509,938	2,740	694	2,442,309	15,952,247
NON-PRODUCING MINES:						
1939.....	186	256,999	-	26	38,671	295,670
1940.....	18	18,746	-	13	11,512	30,258
1941.....	12	10,449	-	6	5,718	16,167
1942.....	71	107,532	-	22	23,242	130,774
1943.....	51	79,818	-	26	31,097	110,915
1944.....	14	20,348	-	20	40,350	60,698
1945.....	97	180,861	-	42	86,443	267,304
1946.....	278	601,289	-	44	121,198	722,487
1947.....	388	951,269	-	55	176,595	1,127,864
1948.....	710	1,735,762	-	67	231,517	1,967,279

1. Not including smelters or refineries.

2. Including any bonus paid.

TABLE 81. Classification of Workmen Employed in the Copper-Gold-Silver Mining Industry, by Provinces, 1946-1948

	Surface		Underground	Mill		Total	
	Male	Female	Male	Male	Female	Male	Female
1948	No.	No.	No.	No.	No.	No.	No.
Quebec.....	865	9	1,197	188	6	2,250	15
Ontario.....	9	-	6	5	-	20	-
Manitoba.....	257	21	391	79	-	727	21
Saskatchewan.....	542	8	570	141	-	1,253	8
British Columbia.....	283	27	620	403	13	1,306	40
Total Canada, 1948.....	1,956	65	2,784	816	19	5,556	84
Total Canada, 1947.....	1,613	60	2,122	746	19	4,481	79
Total Canada, 1946.....	1,779	61	1,909	608	26	4,296	87

TABLE 82. Specified Expenditures by the Copper-Gold-Silver Mining Industry, 1946-1948

	1946	1947	1948
	(dollars)		
Workmen's compensation.....	495,645	576,387	685,829
Silicosis assessment.....	91,082	134,213	147,368
Unemployment insurance.....	67,076	68,216	100,005
Aggregate cost of all supplies purchased.....	8,710,123	8,704,411	15,419,448
Aggregate cost of plant and equipment purchased.....	1,174,342	1,508,447	3,960,036
Cost of buildings, machinery and equipment erected or installed during year.....	1,845,259	1,953,974	7,638,468

TABLE 83. Taxes Paid by the Copper-Gold-Silver Mining Industry, 1947 and 1948

	1947	1948
	\$	\$
Dominion income tax, including tax on non-operating revenue.....	5,118,456	7,018,135
Dominion excess profits tax.....	3,607,674	835,567
Provincial tax.....	2,276,528	3,224,427
Municipal tax.....	490,600	426,990
Grand total taxes paid.....	11,493,258	11,505,119

TABLE 84. Cost of Prospecting Conducted by the Copper-Gold-Silver Mining Industry, by Provinces, 1947 and 1948

Conducted in:	1947	1948	Conducted in:	1947	1948
	(dollars)			(dollars)	
Nova Scotia.....	-	-	Saskatchewan.....	-	14,374
New Brunswick.....	-	-	British Columbia.....	10,887	18,918
Quebec.....	205,492	381,370	Yukon.....	28,883	88,273
Ontario.....	38,485	63,088	Northwest Territories.....	-	2,988
Manitoba.....	67,812	231,039	Total.....	351,559	800,050

TABLE 85. Copper Production (Recoverable) According to Nature of Ore and by Provinces, 1945-1948

Province and year	From copper-gold-silver ores	From nickel-copper ores	From gold and other ores	Total
	(pounds)			
1945:				
Quebec.....	101,940,882	-	744,187	102,685,069
Ontario.....	-	239,450,083	792	239,450,875
Manitoba.....	41,126,155	-	-	41,126,155
Saskatchewan.....	65,900,701	-	-	65,900,701
British Columbia.....	25,613,355	-	137,897	25,751,252
Total Canada.....	234,581,093	239,450,083	882,876	474,914,052
1946:				
Quebec.....	68,939,908	-	857,789	69,797,697
Ontario.....	-	179,421,176	3,463	179,424,639
Manitoba.....	38,501,047	-	-	38,501,047
Saskatchewan.....	62,712,954	-	-	62,712,954
British Columbia.....	17,430,549	-	69,989	17,500,538
Total Canada.....	187,584,458	179,421,176	931,241	367,936,875
1947:				
Quebec.....	84,770,146	-	351,282	85,121,428
Ontario.....	-	227,860,515	7,098	227,867,613
Manitoba.....	30,631,768	-	-	30,631,768
Saskatchewan.....	66,301,926	-	-	66,301,926
British Columbia.....	41,766,876	-	33,482	41,800,358
Total Canada.....	223,470,716	227,860,515	391,862	451,723,093
1948:				
Quebec.....	97,611,653	-	14,626	97,626,279
Ontario.....	-	240,374,476	391,330	240,765,806
Manitoba.....	37,920,181	-	-	37,920,181
Saskatchewan.....	62,148,713	-	-	62,148,713
British Columbia.....	42,894,675	-	108,312	43,002,987
Total Canada.....	240,575,222	240,374,476	514,268	481,463,966

ROYAL CANADIAN MINT

The Ottawa Mint, established as a branch of the Royal Mint under the (Imperial) Coinage Act, 1870, and opened up on January 2, 1908, was by 21-22 Geo. V, C.48, constituted a branch of the Department of Finance and since December 1, 1931, has operated as the Royal Canadian Mint. The great development of the gold mining industry in Canada has resulted in gold refining becoming one of the principal activities of the Mint. Gold coins have never been a popular medium of exchange in Canada and have not been struck since 1919, most of the fine gold produced from the rough shipments from the mines being delivered to the Bank of Canada in the form of bars, the rest being sold in convenient form to manufacturers.

The regulations in part for the receipt of gold bullion at the Royal Canadian Mint, Ottawa, are as follows: Each parcel of bullion for which a separate assay is required shall be regarded as a separate deposit, and no ingot exceeding 1,500 ounces troy, gross weight, will be accepted. All deposits shall be dealt with in the order in which they are received. Deposits containing, by assay, less than 200 parts of gold in 1,000, or appearing, either before or after melting and assaying, to be unsuitable for treatment by the refining process in use, may be rejected. A deposit so rejected shall be returned to the depositor on payment by him of any costs incurred for melting and assaying.

The Mint charges, to be calculated on the gross weight of the deposit after melting, shall be as follows:

(a) For melting and assaying — one dollar for the first four hundred ounces or part thereof and twenty-five cents for each additional one hundred ounces or part thereof.

(b) For refining:

When the deposit contains not more than 5 per cent base metal, 3 cents the ounce.

Over 5 per cent but not over 10 per cent base metal, 3½ cents the ounce.

Over 10 per cent but not over 15 per cent base metal, 4 1/4 cents the ounce.

Over 15 per cent but not over 20 per cent base metal, 5 cents the ounce.

On deposits which contain over 20 per cent base metal, or which require other treatment, a charge not exceeding 10 cents the ounce, to be determined by the cost of treatment.

The minimum charge for refining shall be two dollars for each deposit and the charge for refining shall apply to all deposits containing by assay less than 995 parts fine gold in 1,000.

A handling charge at the rate of 20 cents the ounce fine, to cover costs of realization in a market outside Canada, shall be made on all newly-mined Canadian gold deposited with the Mint, and this charge shall be increased to \$1.00 the ounce fine on all other gold accepted as a deposit. The charges under this paragraph are in addition to the Mint charges payable under Clause 5 of the Mint Regulations and are effective on and after July 27, 1946.

The gross value of gold deposited for sale with the Royal Canadian Mint or the Dominion of Canada Assay Office, Vancouver, shall be the market price of gold in the country to which the Government is at the time of the receipt of the deposit exporting gold, converted into Canadian funds at the average of the buying rates of exchange of that country reported to the Department of Finance by the Bank of Canada at 11 a.m. daily during the week in which the gold is deposited with the Mint or Assay Office.

In addition to newly-mined Canadian gold there may be accepted at the Mint gold (over 1 ounce troy fine) in the following forms: old jewellery and dental scrap, provided it has not been melted or otherwise treated in any way to prevent its origin being readily recognized; scrap from manufacturers and refiners the result of processes carried out by them in the ordinary course of their business; gold coin which, when of full weight and fineness, is not legal tender in Canada. Satisfactory evidence as to the origin of the gold shall be furnished by the depositor if required.

Delivery of deposits shall be accepted at the Mint counter only, free of all charges, and when bullion is forwarded by mail or express the original packages will not ordinarily be opened until an invoice of the description and weight of their several contents has been received. When there is a serious discrepancy between the actual and the invoice weights of any deposit, further action in regard to it will be deferred pending communication with depositor.

The gross value of a deposit shall be calculated at a rate of one dollar for each 23.22 grains fine gold contained therein (equivalent to \$20.6718+ the ounce fine) and at a rate for all silver in excess of one per centum of the weight of the deposit after melting to be determined by the Minister of Finance. The rate to be paid, under Clause 4 of the Regulations, for silver in excess of one per centum of the weight of deposits received in any week, shall average for that week of the official New York daily quotation for fine silver, from Monday to Friday, inclusive, converted into Canadian funds at the average of the Foreign Exchange Control Board's buying rate for United States funds. This Instruction shall become effective for the week commencing Monday, December 9, 1946.

COINAGE

There was an increase of \$2,216,456 in the amount of coin issued during 1948 as compared with the previous year. A detailed statement of the issues by denominations for the years 1947 and 1948 is set out below.

Denomination	Coin issued in			
	1947	1948		1948 Total
		Dated 1947	Dated 1948	
	\$	\$	\$	\$
Silver Coin:				
1 dollar.....	67,000.00	21,876.00	8,080.00	29,956.00
50 cents.....	278,000.00	30,242.00	17,758.00	48,000.00
25 cents.....	397,000.00	1,099,038.75	632,961.25	1,732,000.00
10 cents.....	444,000.00	983,424.20	36,575.80	1,020,000.00
Total Silver.....	1,186,000.00	2,134,580.55	695,375.05	2,829,956.00
Nickel Coin:				
5 cents.....	391,000.00	525,076.60	90,423.40	615,500.00
Bronze Coin:				
1 cent.....	360,300.00	452,296.05	256,003.95	708,300.00
Total.....	1,937,300.00	3,111,953.60	1,041,802.40	4,153,756.00
Representing.....		Number of Pieces		
		70,043,894	30,350,062	
Totals.....	50,501,000	100,393,956		100,393,956

Distribution of the coin issued to the various Agencies of the Bank of Canada was as follows :

	Silver				Nickel	Bronze
	Dollar	50 cents	25 cents	10 cents	5 cents	1 cent
	\$	\$	\$	\$	\$	\$
Calgary.....	-	2,000	162,000	92,000	46,000	54,000
Charlottetown.....	-	-	-	-	-	-
Halifax.....	-	6,000	86,000	44,000	24,000	20,500
Montreal.....	6,000	4,000	304,000	210,000	160,000	183,700
Ottawa.....	13,956	10,000	92,000	54,000	28,000	24,300
Regina.....	-	8,000	158,000	102,000	30,500	43,000
Saint John.....	-	-	48,000	42,000	20,000	6,000
Toronto.....	6,000	14,000	594,000	344,000	219,000	251,500
Vancouver.....	2,000	2,000	76,000	82,000	39,000	64,600
Winnipeg.....	2,000	2,000	212,000	50,000	49,000	60,700
Total.....	29,956	48,000	1,732,000	1,020,000	615,500	708,300

Worn and mutilated coin withdrawn from circulation :

	Withdrawn	Net increase in circulation
	\$	\$
Silver coin.....	50,301.75	2,779,654.25
Nickel coin - 5 cents (mutilated only).....	1,062.15	614,437.85
Tombac coin - 5 cents.....	138,930.05	-
Steel coin - 5 cents.....	438.25	-
Bronze coin.....	2,406.41	705,893.59

GOLD BULLION

Four thousand seven hundred and thirteen deposits of gold bullion were received at the Mint during the year from Canadian mining companies, the Dominion of Canada Assay Office, Vancouver, and sundry persons. The gross weight of the deposits amounted to 4,252,389 ounces, containing by assay 3,401,991 ounces fine gold and 504,369 ounces fine silver. The receipts show an increase as compared with the year 1947 of 482 in the number of deposits, gross weight 692,892 ounces, gold content 533,522 ounces and fine silver 92,740 ounces.

The net amount paid by cheque to depositors was \$115,020,002.50. In addition 14,716,011 ounces of fine gold with a statutory value of \$304,207.38 was also issued in payment of gold deposits.

Postage collected for the Postmaster General on deposits shipped by mail, postage collect, amounted to \$25,764.00.

Details of the origin of the bullion deposited at Vancouver and Ottawa are shown in the following table:

Source	Gross weight	Fine gold	Fine silver
	Ounces	Ounces	Ounces
From Canadian Mines and Refineries:			
Ontario.....	2,581,418.609	2,092,486.019	294,693.23
Quebec.....	1,073,891.150	868,557.978	123,665.17
British Columbia.....	239,507.570	179,085.529	36,406.81
Manitoba.....	102,365.925	79,811.495	8,622.52
Yukon.....	76,047.525	60,605.961	12,421.31
Nova Scotia.....	203.575	188.484	7.98
Northwest Territories.....	143,274.940	101,475.956	25,283.75
Alberta and Saskatchewan.....	111.370	81.636	7.35
Total from Mines and Refineries.....	4,216,820.664	3,382,293.058	501,108.12
From Jewellery and Scrap.....	37,877.320	20,320.631	3,419.93
Grand Total.....	4,254,697.984	3,402,613.689	504,528.05

The following table shows the disposition of the fine gold produced in various forms (trade bars, granulated gold, sweep, medals, etc.):

	Ounces fine
8,195 Trade Bars transferred to Exchange Fund Account of Minister of Finance and held in safe-keeping by Bank of Canada.....	3,277,758.706
Depositors—granulated.....	14,716.011
Sales to manufacturers—granulated.....	108,659.045
Proof plate for assay purposes.....	2.500
Medals.....	4.862
Sweep.....	3,932.211
	3,405,073.335

This total shows an increase of 545,989.117 ounces fine as compared with the year 1947.

Summary of Transactions in Gold Bullion of the Ottawa Branch of the Royal Mint from its opening on January 2, 1908, to its disestablishment on November 30, 1931, and of the Royal Canadian Mint from December 1, 1931, to December 31, 1948

Year	Gold received		Gold issued		
	Gross weight	Statutory value gold only	Coin	Bullion	Statutory value coin and bullion
	Ounces	\$	\$	Ounces fine	\$
1908 to 1938.....	64,471,725.556	1,083,048,898.91	7,923,878.73	51,880,502.929	1,080,389,048.99
1939.....	6,181,336.290	100,656,105.55	—	4,834,214.285	99,932,075.82
1940.....	6,295,218.554	103,169,970.38	30.00	5,026,792.728	103,913,055.43
1941.....	6,444,056.215	105,273,560.67	—	5,134,347.805	106,136,385.78
1942.....	5,761,045.973	95,338,135.90	—	4,611,892.227	95,336,270.79
1943.....	4,456,437.559	74,769,168.35	—	3,645,739.964	75,364,131.92
1944.....	3,537,734.636	59,163,794.79	—	2,829,755.000	58,496,226.17
1945.....	3,102,991.020	51,750,218.87	—	2,499,163.674	51,662,297.22
1946.....	3,271,246.445	54,826,765.59	—	2,665,964.763	55,110,381.61
1947.....	3,559,496.703	59,296,515.31	—	2,859,084.218	59,102,514.80
1948.....	4,252,389.454	70,325,402.34	—	3,405,073.335	70,389,111.41
Total.....	111,333,678.405	1,857,618,536.66	7,923,908.73	89,392,530.928	1,855,831,499.94

CHAPTER THREE

THE SILVER-LEAD-ZINC MINING INDUSTRY

Including

THE SILVER-COBALT MINING INDUSTRY

Definition of the Industry — Silver mining in Canada is not a distinct mining industry inasmuch as silver-bearing minerals usually occur in association with other metals of economic value — with lead and zinc; with copper, nickel and arsenic; with lode and placer free gold; in copper-gold and nickel-copper ores, and at Great Bear Lake, Northwest Territory, with pitchblende. Silver-lead-zinc mining is a very important industry in British Columbia and, to a lesser extent, in the Yukon Territory. In Eastern Canada, lead and zinc ores have been mined in Ontario, Quebec and Nova Scotia.

It is to be noted that, in addition to its recovery from silver-lead ores, zinc is produced in large quantities from copper-gold-silver ores mined in Quebec, Manitoba and Saskatchewan.

General statistical data contained in this report are essentially those pertaining only to the mining of silver-cobalt and silver-lead-zinc ores but the output figures for specific metals represent the total production from all sources.

THE SILVER-LEAD-ZINC MINING INDUSTRY

In 1948 the silver-lead-zinc mining industry in Canada included 77 operators or firms engaged in the mining, exploration or development of silver-lead-zinc deposits: in this group there were 36 producing mines. Employees numbered 4,040 and wages and salaries amounted to \$11,421,086. Process supplies were worth \$4,031,193, and purchased fuel and electricity cost \$1,454,697.

The gross value of production totalled \$108,917,205 and after deducting the cost of fuel, electricity, supplies, freight and treatment charges, the net value was \$85,993,977.

TABLE 86. Principal Statistics of the Silver-Lead-Zinc Mining Industry, 1939-1948

Year	Number of active operators	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Value of ores and concentrates sold ²
	1	\$		\$	\$	\$
1939.....	82	23,664,620	1,646	2,803,057	667,661	13,555,609
1940.....	82	19,969,198	1,585	3,052,532	468,157	16,439,530
1941.....	63	17,717,334	1,666	3,452,199	610,168	20,653,212
1942.....	44	19,484,442	2,185	4,730,370	791,772	23,504,642
1943.....	31	20,603,191	3,097	6,423,724	986,519	21,932,644
1944.....	20	3	2,769	5,810,290	860,231	16,802,759
1945.....	19	3	2,485	5,473,582	816,972	24,858,013
1946.....	33	3	2,451	5,987,111	780,136	44,925,620
1947.....	60	3	3,240	8,304,915	1,029,361	74,044,523
1948:						
Quebec ⁴	20	3	844	2,023,062	280,941	7,825,727
British Columbia.....	52	3	2,994	8,644,878	1,001,341	94,059,702
Yukon and Northwest Territories.....	5	3	202	753,146	172,415	1,545,886
Total.....	77	3	4,040	11,421,086	1,454,697	103,431,315

1. Usually includes a number of small shippers from whom no particulars were received relating to wages, etc.

2. The value of fuel, purchased electricity and process supplies have been deducted.

3. Data not recorded since 1943.

4. Includes one developing mine in Nova Scotia and 3 in Ontario.

TABLE 87. Ore Mined and Milled in the Silver-Lead-Zinc Mining Industry, 1947 and 1948

	Yukon and Northwest Territories	British Columbia	Quebec	Canada
	tons	tons	tons	tons
1947:				
Ore mined.....	20,934	2,396,959	439,568	2,857,461
Ore milled.....	20,880	2,376,498	436,830	2,834,208
Concentrates produced:				
Lead.....	2,309	226,061	8,371	232,741
Zinc.....	-	263,276	36,145	299,421
Pitchblende-silver.....	-	-	-	1
Gold precipitate.....	-	-	18	18
1948:				
Ore mined.....	37,830	2,556,025	553,994	3,147,849
Ore milled.....	37,593	2,551,174	553,343	3,142,110
Concentrates produced:				
Lead.....	5,754	228,329	9,850	243,933
Zinc.....	-	270,225	46,290	316,515
Pitchblende-silver.....	-	-	-	1
Gold precipitate.....	-	-	18	18

1. Data not available for publication.

TABLE 88. Destination of Shipments From Silver-Lead-Zinc Mines, 1947 and 1948

	Tons shipped	Gross value at shipping point	Total Metal Content as Determined by Settlement Assay			
			Gold	Silver	Lead	Zinc
		\$	fine oz.	fine oz.	pounds	pounds
1947						
To Canadian smelters:						
Lead ore.....	7,627	591,601	425	681,908	828,548	650,990
Lead concentrates.....	221,513	41,592,643	11	4,210,538	288,044,098	24,888,209
Zinc concentrates ¹	262,342	30,474,090	14	555,443	27,127,411	254,482,981
Dry ore.....	11	1,529	-	2,211	-	-
Total Canadian	491,493	72,659,863	450	5,450,100	316,000,057	280,022,180
To foreign smelters:						
Lead ore.....	140	35,800	4	26,357	144,923	-
Lead concentrates.....	10,145	2,325,676	156	1,127,216	10,217,509	27,967
Zinc concentrates ¹	36,818	2,636,304	-	4,943	4,648	40,920,443
Gold precipitate.....	18	466,945	4,774	419,653	-	-
Total foreign	47,121	5,464,725	4,934	1,578,169	10,367,080	40,948,410
Total shipments	538,614	78,124,588	5,384	7,028,269	326,367,137	320,970,590
Cost of freight.....	-	1,833,828	-	-	-	-
Cost of fuel and purchased electricity.....	-	1,029,361	-	-	-	-
Smelter charges.....	-	12,348,444	-	-	-	-
Cost of process supplies.....	-	3,050,704	-	-	-	-
Net value of shipments	-	59,862,251	-	-	-	-
1948						
To Canadian smelters:						
Lead ore.....	7,594	802,686	608	807,035	1,162,148	930,699
Lead concentrates.....	224,601	58,625,533	1,165	4,918,964	307,760,000	25,536,407
Zinc ore.....	1,161	28,883	1	7,303	54,543	217,811
Zinc concentrates.....	270,225	38,505,759	213	600,869	25,461,190	266,435,274
Dry ore.....	58	11,623	-	15,575	-	-
Tailings.....	901	13,171	-	1,760	68,915	11,497
Total Canadian	504,540	97,987,655	1,987	6,351,506	334,506,796	293,131,688
To Foreign smelters:						
Lead ore.....	400	181,833	3	101,814	632,941	-
Lead concentrates.....	15,441	4,296,698	10,160	2,315,028	13,092,841	-
Zinc concentrates ¹	45,672	5,896,599	-	-	-	51,698,120
Gold precipitates.....	18	554,420	7,856	381,397	-	-
Total foreign	61,531	10,929,550	18,019	2,798,239	13,725,782	51,698,120
Total shipments	566,071	108,917,205	20,006	9,149,745	347,232,578	344,829,708
Cost of freight.....	-	2,487,099	-	-	-	-
Cost of fuel and purchased electricity.....	-	1,454,697	-	-	-	-
Smelter charges.....	-	14,950,239	-	-	-	-
Cost of process supplies.....	-	4,031,193	-	-	-	-
Net value of shipments	-	85,993,977	-	-	-	-

Note. In addition to the metals contained in shipments listed in Table , there are considerable quantities of lead and silver contained in ores shipped from certain gold mines in British Columbia. Cadmium, bismuth, antimony, tin and sulphur are also recovered from the silver-lead-zinc ores produced in this industry.

1. Does not include any zinc concentrates produced from copper-gold-zinc ores in Quebec, Manitoba, Saskatchewan or British Columbia.

TABLE 89. Employees, Salaries and Wages in the Silver-Lead-Zinc Mining Industry, 1939-1948

Year	Administrative		Workmen		Total employees	Salaries	Wages	Total salaries and wages
	Male	Female	Male	Female				
	No.	No.	No.	No.		\$	\$	\$
1939.....	242	29	1,375	-	1,646	466,721	2,336,336	2,803,057
1940.....	224	20	1,341	-	1,585	519,705	2,532,827	3,052,532
1941.....	217	22	1,427	-	1,666	526,818	2,925,381	3,452,199
1942.....	281	27	1,877	-	2,185	711,770	4,018,600	4,730,370
1943.....	359	48	2,646	44	3,097	940,099	5,483,625	6,423,724
1944.....	318	56	2,336	59	2,769	920,827	4,889,463	5,810,290
1945.....	309	57	2,068	51	2,485	935,838	4,537,744	5,473,582
1946.....	336	63	2,030	22	2,451	1,047,121	4,939,990	5,987,111
1947.....	326	36	2,847	31	3,240	1,446,827	6,858,088	8,304,915
1948.....	497	44	3,452	47	4,040	1,880,694	9,540,392	11,421,086

TABLE 90. Number of Workmen, by Months, in the Silver-Lead-Zinc Mining Industry, 1947 and 1948

Month	1947 Total	1948						Total
		Mine			Mill			
		Surface		Underground				
		Male	Female	Male	Male	Female		
January.....	2,641	833	50	1,842	442	2	3,169	
February.....	2,617	808	48	1,961	453	2	3,272	
March.....	2,606	835	48	1,975	478	2	3,338	
April.....	2,595	869	46	1,974	490	2	3,381	
May.....	2,784	939	46	2,058	520	2	3,565	
June.....	2,979	1,007	48	2,056	523	2	3,636	
July.....	3,012	1,079	47	2,076	532	2	3,736	
August.....	3,099	1,027	36	2,005	521	2	3,591	
September.....	3,098	1,045	36	1,887	519	2	3,489	
October.....	3,042	1,006	29	1,903	536	2	3,476	
November.....	3,001	1,029	31	1,915	553	2	3,530	
December.....	2,927	1,063	29	1,913	578	2	3,585	
Average	2,878	973	45	1,967	512	2	3,499	

TABLE 91. Taxes Paid in 1947 and 1948 by Silver-Lead-Zinc, Nickel-Copper, and Copper-Gold-Silver Mining and Smelting Companies

Tax paid	1947	1948
	\$	\$
Dominion income tax	11,612,457	16,417,993
Dominion excess profits tax	4,234,063	202,871
Provincial tax	3,133,283	4,908,112
Municipal tax	506,306	411,217

SILVER

New silver produced in 1948 from all types of Canadian ores totalled 16,109,982 troy ounces valued at \$12,082,487, an increase over the 12,504,018 troy ounces worth \$9,002,893 in 1947. British Columbia produced 6,717,908 ounces; Ontario 3,210,107 ounces; Quebec 2,376,754 ounces; Yukon 1,718,618 ounces; Saskatchewan 1,323,900 ounces and the remainder originated in Manitoba, Northwest Territories, Nova Scotia and Alberta. The average price of 75 cents per troy ounce was slightly higher than the 72 cents of the previous year.

TABLE 92. Production of Silver (in All Forms) from All Ores, 1939-1948

Year	Ounces	Cents per ounce	Year	Ounces	Cents per ounce
1939.....	23,163,629	40.49	1944.....	13,627,109	43.0
1940.....	23,833,752	38.25	1945.....	12,942,906	47.0
1941.....	21,754,408	38.26	1946.....	12,544,100	83.65
1942.....	20,695,101	42.17	1947.....	12,504,018	72.0
1943.....	17,344,569	45.25	1948.....	16,109,982	75.0

TABLE 93. Production of Silver (All Forms), by Months, 1947 and 1948

Month	1947	1948	Month	1947	1948
	fine ounces	fine ounces		fine ounces	fine ounces
January.....	833,473	1,059,502	July.....	1,116,915	1,970,853
February.....	973,183	1,145,020	August.....	1,153,447	1,678,115
March.....	1,137,858	1,215,564	September.....	1,003,552	1,360,157
April.....	924,469	1,204,934	October.....	1,136,959	1,527,350
May.....	1,010,138	1,186,090	November.....	1,035,684	1,235,792
June.....	1,178,225	1,320,440	December.....	1,000,115	1,206,165
			Total.....	12,504,018	16,109,982

TABLE 94. Production of Silver Bullion, 1942-1948

	fine ounces		fine ounces
1942.....	17,390,000	1946.....	10,774,000
1943.....	15,870,000	1947.....	10,196,000
1944.....	12,020,000		
1945.....	10,890,000	1948.....	12,186,000

TABLE 95. Silver Production According to Nature of Ores, by Provinces, 1948

Province	Crude placer gold	Auriferous quartz ores	Copper-gold-silver ores	Nickel-copper ores	Silver-lead-zinc ores	Silver-cobalt and other ores	Total
				(Ounces)			
Nova Scotia.....	—	8	—	—	—	—	8
Quebec.....	—	125,889	1,059,817	—	1,191,048	—	2,376,754
Ontario.....	—	788,537	—	1,404,338	38,124	979,108	3,210,107
Manitoba.....	—	9,031	728,267	—	—	—	737,298
Saskatchewan.....	—	—	1,323,900	—	—	—	1,323,900
Alberta.....	7	—	—	—	—	—	7
British Columbia.....	2,017	53,678	262,221	—	6,399,992 ¹	—	6,717,908
Northwest Territories.....	—	25,382	—	—	—	—	25,382
Yukon.....	12,421	—	—	—	1,706,197	—	1,718,618
Canada.....	14,445	1,002,525	3,374,205	1,404,338	9,335,361	979,108	16,109,982

1. Contains a relatively small quantity recovered from gold ores.

TABLE 96. Production of Silver, by Provinces, and Method of Computation, 1947 and 1948

	1947		1948	
	Quantity	Value	Quantity	Value
	ounces	\$	ounces	\$
NOVA SCOTIA:				
In gold bullion and concentrates.....	97	70	8	6
QUEBEC:				
In anode copper.....	862,826	621,235	1,062,019	796,514
In gold bullion made and in concentrates exported.....	1,271,363	915,381	1,314,735	986,052
Total.....	2,134,189	1,536,616	2,376,754	1,782,566
ONTARIO:				
In silver recovered in Canada from cobalt ores.....	266,379	191,793	707,971	530,978
In gold bullion.....	340,785	245,365	408,376	306,282
In blister copper.....	1,366,012	983,529	1,295,997	971,998
In ores, concentrates, residues, matte, etc., exported.....	368,856	265,576	797,763	598,322
Total.....	2,342,032	1,686,263	3,210,107	2,407,580
MANITOBA:				
In blister copper.....	417,879	300,873	728,267	546,201
In gold bullion (gold mines) and ores exported.....	6,486	4,670	9,031	6,773
Total.....	424,365	305,543	737,298	552,974
SASKATCHEWAN:				
In blister copper.....	1,282,546	923,433	1,323,900	992,925
In gold bullion and in crude alluvial gold.....	—	—	—	—
Total.....	1,282,546	923,433	1,323,900	992,925
ALBERTA:				
In alluvial gold.....	16	12	7	5
BRITISH COLUMBIA:				
In alluvial gold.....	770	554	2,017	1,513
In gold bullion.....	26,222	18,880	33,850	25,387
In base bullion and in ores, etc., exported.....	5,876,375	4,230,990	6,682,041	5,011,531
Total.....	5,903,367	4,250,424	6,717,908	5,038,431
YUKON:				
In alluvial gold.....	9,699	6,983	12,421	9,316
In silver-lead ores exported.....	362,352	260,894	1,706,197	1,279,648
Total.....	372,051	267,877	1,718,618	1,288,964
NORTHWEST TERRITORIES:				
In pitchblende-silver ores shipped to smelters ¹ and in gold bullion.....	45,355	32,655	25,382	19,036
Canada — Total.....	12,504,018	9,002,893	16,109,982	12,082,487

Note. For 1948 silver was valued at 75 cents per fine ounce, the average price of domestic sales and sales on the New York market adjusted and expressed in Canadian funds; for 1947 the corresponding price was 72 cents.

1. Complete data relating to recovery of silver from pitchblende ores are not available since 1942.

TABLE 97. Source of Silver Production by Percentages, 1944-1948

Source	1944	1945	1946	1947	1948
In silver-cobalt ores.....	5.05	3.68	3.05	2.41	6.08
In base bullion ¹	35.52	39.51	46.72	43.96	41.04
In gold ores (bullion and placer).....	3.21	3.38	3.79	4.03	3.82
In blister and anode copper ²	39.07	36.56	31.72	31.43	27.46
In matte, copper ores and silver-lead ores, etc., exported (other than silver-cobalt ores).....	17.15	16.87	14.72	18.17	21.60
	100.0	100.0	100.0	100.0	100.0

1. Chiefly from silver-lead ores.

2. Made from copper-gold-silver and nickel-copper ores.

TABLE 98. Estimated Consumption of Fine Silver for Industrial Purposes, 1939-1948

	In anodes for plating	In making sterling silver and other silver alloys (except lead- silver alloys)	In making silver nitrate	In lead-silver alloys	Miscellaneous	Total
	(Ounces)					
1939.....	750,000	470,000	615,000	—	250,000	2,085,000
1940.....	600,000	600,000	665,000	—	200,000	2,065,000
1941.....	720,000	1,200,000	790,000	—	250,000	2,960,000
1942.....	800,000	1,600,000	840,000	240,000	250,000	3,730,000
1943.....	800,000	1,620,000	890,000	350,000	300,000	3,960,000
1944.....	900,000	2,650,000	890,000	180,000	360,000	4,980,000
1945.....	960,000	3,740,000	1,040,000	130,000	410,000	6,280,000
1946.....	1,301,000	3,490,000	937,000	40,000	404,000	6,172,000
1947.....	1,155,000	1,384,000	874,000	37,000	253,000	3,703,000
1948.....	1,365,000	1,800,000	956,000	5,000	248,000	4,374,000

Note. Amounts used for coinage not included in above figures.

TABLE 99. Imports and Exports of Silver and Silver Products, 1947 and 1948

	1947		1948	
	Quantity	Value	Quantity	Value
	(Ounces)	\$	(Ounces)	\$
IMPORTS:				
Silver, unmanufactured.....	71,499	57,004	717,817	528,460
Silver manufactures of, n.o.p.	—	681,955	—	530,819
Toilet articles of which the most important component, in value, is sterling silver....	—	22,797	—	4,923
TOTAL	—	761,756	—	1,064,202
EXPORTS:				
Silver contained in ore, concentrates, etc.	2,722,261	1,998,464	3,294,691	2,433,953
Silver bullion (Canadian).....	7,514,373	5,429,335	5,434,364	4,026,174
Silver manufactures.....	—	647,220	—	646,036
TOTAL	—	8,075,019	—	7,106,163

TABLE 100. Silver Production of the World (From the American Bureau of Metal Statistics)

	1946	1947	1948
		(Fine troy ounces)	
NORTH AMERICA:			
United States	21,377,000	36,053,000	36,111,000
Canada	12,544,100	12,504,018	16,109,982
Mexico	48,297,659	49,197,505	45,800,000
Newfoundland	1,107,827	956,000	882,000
Total North America	83,326,586	98,710,523	98,902,982
CENTRAL AMERICA AND WEST INDIES:			
	3,600,000	3,100,000	3,700,000
SOUTH AMERICA:			
Argentina	3,090,000	2,435,400	1,201,000
Bolivia	6,108,500	6,273,100	7,562,034
Chile	557,320	747,037	861,942
Colombia	151,971	110,830	100,000
Ecuador	243,250	156,931	175,000
Peru	12,333,865	10,782,660	9,288,489
Other South America	50,000	50,000	50,000
Total South America	22,534,906	20,519,958	19,239,365
EUROPE:			
Czechoslovakia	620,638	643,000	-
Finland	137,420	170,000	-
France	304,853	-	-
Great Britain	23,285	25,000	25,000
Italy	298,000	460,900	601,000
Hungary	-	-	-
Norway	180,040	218,620	147,900
Romania	-	481,200	-
Spain	669,009	638,178	-
Sweden	1,294,906	1,088,631	1,100,000
Australia	9,045,280	9,527,140	9,335,000
New Guinea	300	27,000	33,000
New Zealand	224,341	221,984	232,563
ASIA:			
India and Burma	-	1	-
Formosa	-	-	-
Japan	1,281,600	2,272,400	-
Korea	27,553	1	-
AFRICA:			
Algeria	-	-	-
Belgian Congo	5,047,550	4,057,201	3,805,531
Rhodesia	729,560	165,217	81,404
Transvaal, Cape Colony and Natal	1,203,978	1,147,694	1,202,400
French Morocco	-	-	-
Gold Coast	54,525	-	-
Southwest Africa	-	-	301,168

Note. World totals are not shown, as production from Russia, Siberia, and some other countries is not known.
1. Not available.

LEAD

Output of new lead from Canadian ores in 1948 amounted to 167,251 tons compared with 161,668 tons in 1947, these figures represent the lead in base bullion plus the recoverable lead content in ores exported. The production of refined lead from all sources, including foreign ores imported to Canada, amounted to 160,025 tons.

Lead production in Canada comes from the silver-lead-zinc mines in British Columbia, the silver-lead ores in the Yukon and the zinc-lead mines in Quebec and Ontario. The Sullivan mine at Kimberley, British Columbia, operated by the Consolidated Mining and Smelting Company of Canada, is the principal source of production. Concentrates from this mine are treated in the company's smelter at Trail, British Columbia. Some concentrates produced in eastern Canada were exported for further treatment.

TABLE 101. Production¹ of New Lead, 1939-1948

Year	Tons	\$	Average price per pound (Canadian funds)	Year	Tons	\$	Average price per pound (Canadian funds)
			¢				¢
1939.....	194,285	12,313,768	3.169	1944.....	152,291	13,706,199	4.500
1940.....	235,925	15,863,605	3.362	1945.....	173,497	17,349,723	5.00
1941.....	230,084	15,470,815	3.362	1946.....	176,987	23,893,230	6.75
1942.....	256,071	17,218,233	3.362	1947.....	161,668	44,200,124	13.67
1943.....	222,030	16,670,041	3.754	1948.....	167,251	60,344,146	18.04

1. Primary lead in base bullion produced plus lead in ores exported.

TABLE 102. Production of Lead, by Months, 1947 and 1948

Month	Lead (All forms)		Refined lead	
	1947	1948	1947	1948
	(Tons)			
January.....	12,782	11,267	13,385	10,845
February.....	12,843	13,200	13,252	10,645
March.....	14,662	12,702	14,857	13,409
April.....	13,138	13,077	14,014	12,885
May.....	13,047	12,975	14,837	13,081
June.....	14,584	11,317	14,470	11,356
July.....	14,283	14,570	12,475	9,314
August.....	13,836	16,903	9,140	12,010
September.....	13,480	15,338	13,899	15,900
October.....	12,997	16,049	14,139	17,747
November.....	14,892	16,031	13,726	16,275
December.....	11,123	13,822	13,806	16,558
Total.....	161,668	167,251	162,000	160,025

TABLE 103. Production, Imports and Exports of Lead, 1947 and 1948

	1947		1948	
	Pounds	Value	Pounds	Value
		\$		\$
PRODUCTION:				
Quebec	8,175,577	1,117,601	9,521,844	1,717,741
Ontario	282,765	38,654	343,883	62,036
British Columbia	313,733,089	42,887,313	320,037,525	57,734,770
Yukon	1,145,256	156,556	4,598,665	829,599
Total	323,336,687	44,200,124	334,501,917	60,344,146
IMPORTS:				
Pig and block	14,113	3,633	116,366	19,830
Old and scrap	4,175	322	36,231	3,361
Bars and sheets	14,389	3,715	8,211	2,237
Litharge for storage batteries	489,200	82,546	411,100	86,448
Acetate of lead	207,635	39,463	79,415	16,547
Nitrate of lead	35,692	6,289	81,505	15,402
Other manufactures	-	149,161	-	225,106
Shots and bullets	3,086	1,260	3,164	1,095
Lead tetraethyl, compounds of	14,053,747	4,302,110	14,571,006	5,131,472
Lead capsules for bottles	-	6,764	-	39,229
Lead pigments:				
Dry white lead	255,560	46,000	110,060	19,578
White lead, ground in oil	3,000	1,400	1,612	403
Dry red lead and orange mineral	35,405	6,775	41,795	8,830
Total	-	4,649,438	-	5,569,538
EXPORTS:				
Lead, contained in ore	13,451,100	1,601,583	11,214,200	1,563,492
Pig lead	249,930,900	29,098,727	207,524,300	32,758,514
White lead	692,200	108,935	3,553,700	707,751
Lead, manufactures	-	244,520	-	361,745
Total	-	31,113,765	-	35,391,502

TABLE 104. Production, Imports, Exports and Domestic Consumption of Refined Lead, 1939-1948

Year	Production in Canada	Domestic consumption	Exports	Imports	Stocks ¹ at end of period
(Tons of 2,000 pounds)					
1939	190,568	27,095	180,736	6	Not available
1940	220,087	37,621	151,546	121	62,653
1941	228,027	58,403	184,289	148	42,371
1942	243,306	58,203	210,782	9	32,975
1943	223,871	53,090	154,473	10	34,131
1944	143,556	51,671	102,879	10	26,325
1945	163,142	62,263	107,291	8	19,900
1946	165,744	62,784	102,000	6	21,230
1947	162,000	64,131	118,214	-	9,134
1948	160,025	59,542	108,302	-	3,866

1. Producers' and consumers'.

TABLE 105. Consumption of Refined Lead by Principal End Uses, 1946-1948

Uses	1946	1947	1948
(Tons)			
Solders and alloys ¹	19,329	15,806	15,642
White lead, red lead and litharge	11,965	10,269	9,386
Storage batteries ²	16,472	18,489	18,482
Foil and collapsible tubes	1,708	911	400
Ammunition	686	349	342
Iron and steel	1,137	1,921	1,774
Cable covering	9,267	12,624	12,247
Miscellaneous	2,220	3,762	1,269
Total	62,784	64,131	59,542

1. Does not include lead in antimonial lead for storage batteries.
2. Includes new lead and lead content of antimonial lead.

TABLE 106. Lead Production of the World on Mine Basis, 1946-1948 (From the Annual Report of the American Bureau of Metal Statistics)

	1946	1947	1948
	(tons)		
United States	335,475	384,221	386,932
Canada	176,987	161,668	164,284
Newfoundland	27,793	23,300	22,100
Mexico	186,592	216,579	217,700
Total North America	726,847	785,768	791,016
Argentina	20,000	23,000	24,000
Bolivia	9,297	12,467	28,230
Peru	49,072	60,421	53,503
Total South America	78,369	95,888	105,733
Austria	1,081	1,684	3,315
Czechoslovakia	2,351	1	1
France	9,145	8,047	12,784
Germany	16,951	16,266	24,636
Great Britain	2,912	3,144	2,554
Greece	1,217	992	1,748
Italy	14,964	26,212	33,142
Poland	7,800	8,600	-
Roumania	3,554	3,853	-
Spain	42,380	33,560	-
Sweden	23,468	22,992	30,084
Yugoslavia	1	1	1
Burma	-	-	8,344
China, including Hong Kong	15	2	2
Turkey	-	-	-
Japan	4,683	6,429	7,368
Australia	195,338	209,664	229,034
Algeria	1,119	1,258	1,151
Belgian Congo	1,150	923	643
French Morocco	12,348	23,612	31,127
French Equatorial Africa	2,900	2,850	2,760
Tunis	9,540	13,762	14,744
Rhodesia	9,226	17,518	14,582
Southwest Africa	-	14,431	27,958

Note. Omitted are Russia, Manchuria and Korea.

1. Unknown.
2. Unknown, but probably small.

ZINC

Production of primary zinc in all forms totalled 234,164 tons in 1948, an increase of 11 per cent from the 1947 total of 207,863 tons. The largest producer was the Sullivan mine of the Consolidated Mining and Smelting Company of Canada Limited, at Kimberley, British Columbia. Several mines in British Columbia exported zinc in concentrates and many shipped their ores to the Trail smelter. The zinc recovered at Hudson Bay Mining and Smelting Company's refinery at Flin Flon, Manitoba, originated in the copper-gold-silver ores from the Flin Flon and Sherritt-Gordon mines. Zinc concentrates from the mines in Quebec were exported. Producers in Quebec include: Waite Amulet and Normetal, which have copper-gold-silver ores, also Golden-Manitou and New Calumet, whose ores are classified as lead-zinc. The latter mine made shipments of concentrates to Trail, British Columbia.

TABLE 107. Production¹ of Zinc From All Types of Canadian Ores, 1939-1948

Year	Tons	\$	Average price per pound (Canadian funds)	Year	Tons	\$	Average price per pound (Canadian funds)
			¢				¢
1939	197,267	12,108,244	3.07	1944	275,412	23,685,405	4.30
1940	212,014	14,463,624	3.41	1945	258,607	33,308,556	6.44
1941	256,191	17,477,337	3.41	1946	235,310	36,755,450	7.81
1942	290,129	19,792,579	3.41	1947	207,863	46,686,010	11.23
1943	305,377	24,430,174	4.0	1948	234,164	65,237,956	13.93

Note: The total value of Canadian zinc production since the first recording of Canadian zinc statistics in 1898, and inclusive of 1948, totalled \$462,521,753.

1. Comprises of zinc made in Canada plus zinc in ores, etc., exported.
2. Year of maximum Canadian zinc production.

TABLE 108. Production of Zinc, by Months, 1947 and 1948

Month	Primary zinc in all forms		Refined zinc	
	1947	1948	1947	1948
	(Tons)			
January	17,030	16,978	14,210	14,449
February	15,557	17,335	13,346	14,425
March	16,478	18,394	13,981	15,033
April	17,651	19,330	15,089	15,545
May	17,458	20,258	14,961	15,670
June	17,395	18,828	14,755	14,496
July	17,512	21,546	14,796	17,490
August	16,231	20,510	14,235	17,249
September	17,400	19,766	14,795	17,320
October	18,079	22,094	15,385	18,627
November	18,200	20,958	15,891	17,983
December	18,872	18,167	16,820	18,288
Total	207,863	234,164	178,264	196,575

TABLE 109. Refined Zinc Produced, 1939-1948

Year	Average price per pound	Short tons	Year	Average price per pound	Short tons
	¢			¢	
1939	3.07	175,641	1944	4.30	168,518
1940	3.411	185,722	1945	6.44	182,266
1941	3.411	213,608	1946	7.81	185,683
1942	3.411	215,795	1947	11.23	178,264
1943	4.00	206,510	1948	13.93	196,575

TABLE 110. Canadian Zinc Production (Recoverable) According to Nature of Ores, by Provinces, 1944-1948

Year and Province	Recovered from copper-gold-silver ores	Recovered from silver-lead-zinc and other ores	Total
	(Pounds)		
1944:			
Quebec	78,069,636	59,308,803	137,378,439
Ontario	-	2,429,176	2,429,176
Manitoba	45,822,278	-	45,822,278
Saskatchewan	87,130,087	-	87,130,087
British Columbia	1,953,077	276,110,296	278,063,373
Total Canada	212,975,078	337,848,275	550,823,353
1945:			
Quebec	64,798,734	47,110,831	111,909,565
Ontario	-	237,799	237,799
Manitoba	34,860,754	-	34,860,754
Saskatchewan	75,413,851	-	75,413,851
British Columbia	-	294,791,635	294,791,635
Total Canada	175,073,339	342,140,265	517,213,604
1946:			
Quebec	49,881,428	39,768,701	89,650,129
Ontario	-	42,628	42,628
Manitoba	35,580,537	-	35,580,537
Saskatchewan	71,077,110	-	71,077,110
British Columbia	-	274,269,956	274,269,956
Total Canada	156,539,075	314,081,285	470,620,360
1947:			
Quebec	35,078,583	34,384,342	69,462,925
Ontario	-	-	-
Manitoba	27,753,131	-	27,753,131
Saskatchewan	65,503,602	-	65,503,602
British Columbia	4,164,033	248,842,135	253,006,168
Total Canada	132,499,349	283,226,477	415,725,826
1948:			
Quebec	51,186,597	44,571,442	95,758,039
Manitoba	41,315,045	-	41,315,045
Saskatchewan	60,943,757	-	60,943,757
British Columbia	5,620,225	264,689,970	270,310,195
Total Canada	159,065,624	309,261,412	468,327,036

TABLE 111. Production, Imports and Exports of Zinc, 1947 and 1948

	1947		1948	
	Pounds	Value	Pounds	Value
		\$		\$
PRODUCTION:				
Quebec	69,462,925	7,800,686	95,758,039	13,339,095
Manitoba	27,753,131	3,116,677	41,315,045	5,755,186
Saskatchewan	65,503,602	7,356,054	60,943,757	8,489,465
British Columbia	253,006,168	28,412,593	270,310,195	37,654,210
Total	415,725,826	46,686,010	468,327,036	65,237,956
IMPORTS:				
Zinc dust	384,000	48,725	477,900	78,583
Zinc in blocks, pigs, bars and rods, and zinc plates, n.o.p.	121,800	24,195	32,500	7,325
Zinc in sheets and strips, and zinc plates for marine boilers	3,695,900	593,369	5,865,000	1,070,153
Zinc slugs for dry batteries	-	176,166	-	393,859
Zinc white (zinc oxide)	4,410,298	477,821	3,464,454	396,478
Zinc sulphate	832,244	41,262	799,707	39,130
Zinc chloride	350,383	23,969	474,561	32,140
Zinc, manufactures of, n.o.p.	-	1,350,647	-	1,447,452
Lithopone	25,472,816	1,795,269	29,574,145	2,026,567
Total	-	4,531,423	-	5,491,687
EXPORTS:				
Zinc, manufactures of	-	172,465	-	159,232
Zinc, contained in ore	81,149,600	2,916,649	108,453,600	4,752,238
Zinc, scrap, dross and ashes	9,439,100	442,168	14,437,100	899,061
Zinc, spelter	274,456,100	26,661,360	289,773,000	36,685,950
Total	-	30,192,642	-	42,496,481

TABLE 112. Production, Imports, Exports and Domestic Consumption of Refined Zinc, 1939-1948

Year	Production in Canada	Domestic consumption	Exports	Imports	Stocks ¹ at end of period
(Tons of 2,000 pounds)					
1939	175,641	22,981	155,995	-	Not available
1940	185,722	36,913	167,073	1	10,028
1941	213,608	56,708	141,086	-	14,903
1942	215,795	84,000	152,159	58	9,080
1943	206,510	80,599	129,315	13	26,100
1944	168,518	67,359	95,985	4	33,220
1945	183,317	55,663	121,969	-	37,700
1946	185,683	54,969	151,885	-	23,265
1947	178,264	51,065	127,036	-	21,275
1948	196,575	50,451	147,454	-	13,849

1. Producers' and consumers' stocks.

TABLE 113. Consumption of Refined Zinc, by Industries, 1944-1947

Industry	1944	1945	1946	1947
(Tons of 2,000 pounds)				
In brass foundries	28,189	16,520	16,687	8,300
In white metal foundries	5,229	5,566	5,406	3,660
In iron and steel (chiefly galvanizing)	19,400	19,000	16,310	21,515
In chemicals (zinc oxide, etc.)	10,960	12,006	13,566	15,345
In electrical apparatus	1,747	1,571	2,670	1,862
In non-ferrous smelters	206	200	160	143
In ammunition	1,478	600	-	-
In miscellaneous industries	150	200	170	240
Total	67,359	55,663	54,969	51,065

TABLE 114. World's Production of Slab Zinc¹ 1946, 1947 and 1948 (From the American Bureau of Metal Statistics)

Country	1946	1947	1948
	(Tons)		
United States ²	728,262	802,495	790,300
United States ³	44,516	59,542	59,800
Mexico	53,311	53,030	55,732
Canada	185,692	178,167	196,649
Total North America	1,011,781	1,093,234	1,102,481
Argentina	2,000	2,900	1,766
Peru	1,446	1,191	1,540
Belgium	89,231	146,618	169,468
France	32,764	49,828	61,803
Germany	18,264	22,843	45,589
Great Britain	73,199	76,490	80,621
Italy	17,202	26,588	29,495
Netherlands	2,217	10,507	14,978
Norway	34,204	38,118	46,298
Poland	62,767	79,005	96,000
Spain	19,042	21,874	23,338
Australia	85,474	77,752	91,607
Japan	12,370	16,343	23,342
Rhodesia	19,250	23,676	24,930

1. The statistics in this table are the summaries of production as made by the metallurgical works in the several countries.
2. Production from ores, foreign and domestic.
3. Production from secondary material.

TABLE 115. Cadmium Recovered from Canadian Ores, 1939-1948

	From copper-gold-silver-zinc ores	From silver-lead-zinc ores	Total
	(pounds)		
1939	140,438	799,253	939,691
1940	129,336	778,791	908,127
1941	169,917	1,081,374	1,251,291
1942	176,550	972,413	1,148,963
1943	187,938	598,673	786,611
1944	140,560	396,410	526,970
1945	135,632	510,432	646,064
1946	166,333	636,315	802,648
1947	172,896	545,638	718,534
1948	148,864	617,226	766,090

CADMIUM

Cadmium is recovered from the silver-lead-zinc ores treated by the smelter of the Consolidated Mining and Smelting Company of Canada Limited, Trail, British Columbia, and from the copper-gold-zinc ores processed at the smelter of the Hudson Bay Mining and Smelting Company Limited, Flin Flon, Manitoba. Output in 1948 amounted to 766,090 pounds compared with 718,534 pounds in 1947.

TABLE 116. Production, Exports and Domestic Consumption of Cadmium Metal, 1939-1948

Year	Production	Domestic consumption	Exports
1939	470	41	525
1940	454	75	389
1941	625	149	455
1942	574	207	400
1943	393	168	286
1944	263	108	192
1945	323	87	175
1946	401	96	296
1947	359	72	309
1948	383	92	275

THE SILVER-COBALT MINING INDUSTRY

The mining of silver-cobalt ores in Canada is confined almost entirely to the district of Temiskaming in northern Ontario. Veins containing these metals were discovered at or near the present town of Cobalt in 1903 and shipments of ores from this area have been continuous since 1904. Depletion and exhaustion of ore reserves during recent years have resulted in a relatively great decline in the production of metals from these deposits. In most instances, operations at properties, some of which were prominent as producers in the past, are conducted by lessees and shipments range from one to several hundred tons. The increase in the price of silver has renewed effort resulting in a sizeable production from a few mines.

The number of operators reported as actively engaged in the mining or shipping of silver-cobalt ores in 1948 totalled 12; employees numbered 172; and payments for salaries and wages amounted to \$413,095. The gross value of mine and mill shipments was \$499,068. The stockpile of cobalt-silver ore accumulated during World War 2, for the Metals Reserve was removed from Deloro, Ontario to New Jersey, United States.

TABLE 117. Principal Statistics of the Silver-Cobalt Mining Industry, 1939-1948

Year	Number of active operators	Number of operating mines	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Net value of bullion ore, concentrates or residues sold
	1	2	\$		\$	\$	\$
1939	36	43	2,461,556	323	412,728	63,486	653,032
1940	48	44	337,080	123	158,024	10,900	809,263
1941	24	14	439,877	182	229,984	40,875	662,443
1942	13	14	358,691	192	283,980	68,349	600,207 ³
1943	20	21	587,039	221	290,654	74,691	578,861 ³
1944	10	11	4	165	260,575	48,323	323,260 ³
1945	7	8	4	166	247,203	49,553	82,508
1946	11	11	4	247	404,012	58,712	207,483
1947	12	12	4	183	359,963	62,148	253,363
1948	17	12	4	172	413,095	100,779	321,415

1. Includes lessees shipping from dumps.

2. Includes properties on which operations were of a salvage nature only.

3. Includes value of ores consigned to the United States Government stock pile at Deloro, Ontario.

4. Not recorded.

TABLE 118. Summary¹ of Operations of Silver-Cobalt Mines and Mills, 1946-1948

	1946	1947	1948
Number of mines in operation ²	11	12	17
Ore mined	32,841	10,572	14,541
Ore salvaged from surface ³	291	4,323	8,905
Ore treated (milled) ⁴	29,635	16,656	18,155
Concentrates produced	678	217	874
Gross value of bullion, ore, concentrates and residues sold	\$ 325,846	\$ 343,937	\$ 499,068
Cost of freight	\$ 759	\$ 1,571	\$ 8,056
Smelter charges	\$ 9,960	\$ 1,417	\$ 22,770
Cost of fuel and purchased electricity used	\$ 58,712	\$ 62,148	\$ 100,779
Cost of process supplies used	\$ 48,932	\$ 25,238	\$ 46,048
Net value of sales	\$ 207,483	\$ 253,563	\$ 321,415

1. Partly estimated as data unobtainable from some small shippers.

2. All mines located in northern Ontario and includes properties on which the operations consisted only in salvaging of ore from dumps, etc.

3. Complete data not available.

4. Does not include crude ore shipped.

TABLE 119. Mine and Mill Shipments of Canadian Silver-Cobalt Ores and Concentrates, 1947 and 1948

	Gross weight	Metal Content			
		Silver	Cobalt	Nickel	Copper
	(tons)	oz.	lb.	lb.	lb.
1947					
To Canadian smelters and to Government stockpile at Deloro, Ontario.....	440	327,824	103,854	11,628	4,372
To foreign plants.....	705	58,979	90,122	32,512	12,160
Total.....	1,145	386,803	193,976	44,140	16,532
1948					
To Canadian smelters and to Government stockpile at Deloro, Ontario.....	859	530,673	31,431	8,322	9,598
To foreign plants.....	519	19,894	115,739	45,531	10,302
Total.....	1,378	550,567	147,170	53,853	19,900

TABLE 120. Employees, Salaries and Wages in the Silver-Cobalt Mining Industry, 1939-1948

Year	On Salaries		On Wages		Total employees	Salaries	Wages	Total salaries and wages
	Male	Female	Male	Female				
	No.	No.	No.	No.		\$	\$	\$
1939.....	41	4	278	—	323	75,730	336,998	412,728
1940.....	17	1	105	—	123	40,970	117,054	158,024
1941.....	22	3	157	—	182	60,914	169,070	229,984
1942.....	24	3	165	—	192	63,722	220,258	283,980
1943.....	34	6	180	1	221	56,570	234,084	290,654
1944.....	20	4	140	1	165	43,960	216,615	260,575
1945.....	14	5	146	1	166	42,267	204,936	247,203
1946.....	20	3	223	1	247	59,085	344,927	404,012
1947.....	21	3	158	1	183	75,807	284,156	359,963
1948.....	22	3	145	2	172	66,509	346,586	413,095

TABLE 121. Number of Workmen on Payroll or Time Record at End of Month in the Silver-Cobalt Mining Industry, 1947-1948

Month	1947					1948				
	Mine		Mill		Total	Mine		Mill	Total	
	Surface	Under-ground				Surface	Under-ground			
	Male	Male	Male	Female		Male	Female	Male		Male
January.....	66	114	40	1	221	54	1	54	3	112
February.....	63	93	30	1	187	54	—	54	7	115
March.....	54	91	20	1	166	58	—	64	13	135
April.....	56	91	17	1	165	69	1	70	13	153
May.....	40	102	19	1	162	61	1	78	12	152
June.....	40	100	15	1	156	51	2	87	18	158
July.....	32	87	13	1	133	42	2	97	16	157
August.....	33	86	9	1	129	39	2	88	31	160
September.....	32	82	20	1	135	39	2	102	36	179
October.....	32	89	26	1	148	35	2	103	34	174
November.....	31	92	27	1	151	37	2	77	15	131
December.....	31	85	19	1	136	39	2	76	8	125
Average.....	42	95	21	1	159	48	2	80	17	147

COBALT

The source of cobalt in Canada in the past has been the ores from the Cobalt-Gowganda area. A new producer of cobalt oxide entered the market in 1946 when the International Nickel Company of Canada Ltd., began the commercial recovery of cobalt-oxide, at Port Colborne from the nickel-copper ores of the Sudbury district.

The greater portion of the 1948 output of cobalt and its products from ores of Canadian origin was derived from material which has been stockpiled at the Deloro smelter. The exports of cobalt in concentrated ore in 1948 increased due to the removal of the stockpile of the Metals Reserve from Deloro, Ontario to New Jersey, United States.

TABLE 122. Production of Cobalt From Canadian Ores, 1939-1948

Year	Pounds	Year	Pounds
1939.....	732,561	1944.....	36,283 ¹
1940.....	794,359	1945.....	109,123
1941.....	263,257	1946.....	73,900
1942.....	83,871 ¹	1947.....	572,673
1943.....	175,961 ¹	1948.....	1,544,852

1. Exclusive of cobalt in ores placed on United States Government stock pile at Deloro, Ontario, but includes metal in ores reshipped from this stock pile.

TABLE 123. Production of Cobalt From Canadian Ores, Imports and Exports, 1947 and 1948

	1947		1948	
	Quantity	\$	Quantity	\$
	(pounds)		(pounds)	
PRODUCTION:				
(In terms of metallic cobalt and cobalt in oxides and salts sold and in ores exported).....	572,673	875,644	1,544,852	2,029,178
IMPORTS:				
Cobalt ore.....	-	-	848,100	64,857
Oxide of cobalt.....	740	753	100	205
EXPORTS:				
Cobalt, contained in ore.....	89,300	69,060	871,000	641,320
Cobalt, metallic.....	40,366	72,095	31,410	61,824
Cobalt, alloys.....	59,728	316,849	88,734	466,478
Cobalt oxides and cobalt salts.....	837,405	835,141	876,895	1,032,710

TABLE 124. World Production of Cobalt, 1943-1948 (From the Annual Report of the American Bureau of Metal Statistics)

Country	1943	1944	1945	1946	1947	1948
	(pounds)					
Canada ¹	175,961	36,283	109,123	73,900	572,900	1,544,852
Burma ²	Not available					
Northern Rhodesia ³	2,151,300	2,087,000	1,498,000	1,078,300	859,900	868,300
Belgian Congo ³	4,544,000	4,138,000	6,184,000	4,753,000	7,848,000	9,301,200
French Morocco.....	476,000	536,000	489,000	412,000	822,316	612,000

1. Metal recovered from smelter products plus cobalt contained in cobalt residues exported.

2. Estimated cobalt content of nickel speiss.

3. Cobalt content of alloys.

ARSENIC

Production of Arsenic (As_2O_3) from Canadian ores during 1948 was 1,161,996 pounds valued at \$82,909 compared with 787,736 pounds worth \$49,348 in 1947. In Quebec the Consolidated Beattie Mines Ltd. and the O'Brien Gold Mines Ltd. roast their arsenical ores. Both crude and refined grades of arsenic are produced by the Beattie mines. The crude from the O'Brien mines is shipped to the Deloro smelter for refining. The production from Ontario ores originated in the silver-cobalt ores treated at the Deloro plant. The auriferous quartz ores exported to the United States from British Columbia mines contain considerable amounts of arsenic but no data are available on the possible recovery of this arsenic and since the Canadian gold mines receive no payment for the arsenic content, it is not credited as commercial production.

TABLE 125. Production, Imports and Exports of Arsenic, 1947 and 1948

	1947		1948	
	Quantity (pounds)	Value \$	Quantity (pounds)	Value \$
PRODUCTION:				
White arsenic.....	787,736	49,348	1,161,996	82,909
IMPORTS:				
Arsenic acid.....				
White arsenic (arsenious oxide).....	3,589,018	175,305	1,395,809	68,008
Soda, arseniate of, binarsenate.....	246,379	24,150	84,390	13,056
Arsenate of lead.....	68,954	20,004	68,510	18,910
Arsenate of lime.....	4,512	964	430	150
	-	-	-	-
EXPORTS:				
Arsenic ¹	4,369,400	176,697	4,051,300	162,103

1. Includes arsenic content in gold ores exported from British Columbia.

TABLE 126. Production, Imports and Exports of Arsenic, 1942-1948

Year	Production ¹	Imports	Exports	
			Refined	Crude
			(pounds)	
1942.....	7,853,123	2,082	2,204,889	5,844,611
1943.....	3,153,538	400	2,358,400	199,358
1944.....	2,627,022	2,405	2,016,000	-
1945.....	2,045,730	-	1,519,697	-
1946.....	745,885	500	418,000	-
1947.....	787,736	246,379	130,300	-
1948.....	1,161,996	84,390	170,800	-

1. Crude and refined.

TABLE 127. Consumption of Refined Arsenic, 1945-1948

Industry	1945	1946	1947	1948
	(pounds)			
Glass	303,246	336,501	432,449	432,711
Insecticides ¹	340,000	55,808	117,051	15,390
White metals	62,000	60,110	37,454	30,927
Miscellaneous chemicals	8,000	14,800	39,520	229,561
Total Accounted For.....	713,246	467,219	626,474	708,589

1. Does not include arsenic acid (As_2O_5) imported for use in making insecticides, as follows:

1945..... 5,667,053 pounds
1946..... 3,867,606 pounds
1947..... 3,589,018 pounds
1948..... 1,395,809 pounds

CHAPTER FOUR

THE NICKEL-COPPER INDUSTRY

Statistics relating to the nickel-copper mining, smelting and refining industry, as shown in this report, include those pertaining to the mining of copper-nickel ores, the smelting of these ores in Canada, and the production in the Dominion of refined copper, nickel, etc., by the firms constituting this industry.

In addition to production of nickel, copper and the platinum metals, there is an important recovery from these ores of the associated metals — silver, gold, selenium and tellurium; sulphur for the manufacture of sulphuric acid is also salvaged in the gaseous state from waste smelter gases. The total gross value of the various primary products of this industry, considered as a whole, was estimated at \$142,228,550 in 1948 compared with \$133,715,083 in 1947.

Two companies operated both mines and metallurgical plants in the Sudbury area in 1948. The International Nickel Company of Canada, Limited operated smelters at Copper Cliff and Coniston, while the Falconbridge Nickel Mines, Ltd., smelted its ores at the Falconbridge mine located a few miles east of the town of Sudbury. This last-named company exported its matte to a refinery located at Kristiansand, Norway.

The relatively small amount of nickel oxide sometimes produced at Deloro, Ontario, is recovered from silver-cobalt-nickel-arsenic ores mined in northern Ontario. Smelter matte made by the International Nickel Company of Canada, Limited, is treated in plants located at Clydach, Wales; Huntingdon, West Virginia, U.S.A.; and at Port Colborne, Ontario and Copper Cliff, Ontario. Converter copper made by the International Nickel Company is electrolytically refined at Copper Cliff, and refined nickel is produced by the company at Port Colborne. In 1948 the International Nickel Company of Canada, Limited, shipped ore from the Garson, Creighton, Levack, Frood, Stobie and Murray mines.

In the Lynn Lake area in Manitoba, the Sherritt-Gordon Mines Ltd. continued development work on its promising deposit of nickel-copper ore.

The industry, as a whole, employed 14,233 persons and distributed \$40,829,857 in wages and salaries. Fuel and electricity cost \$13,917,980 and process supplies cost \$13,670,771.

TABLE 128. Principal Statistics of the Nickel-Copper Mining, Smelting and Refining Industry, 1946-1948¹

	1946	1947	1948
Number of firms	5	18	11
Number of mines.....	14	24	15
Number of smelters	3	3	3
Number of copper refineries.....	1	1	1
Number of nickel refineries.....	1	1	1
Number of employees:			
Administrative.....	1,172	1,297	1,409
Workmen.....	9,009	11,626	12,824
Total.....	10,181	12,923	14,233
Salaries and wages:			
Salaries..... \$	3,671,894	4,564,766	5,442,325
Wages..... \$	18,568,777	27,106,262	35,387,532
Total..... \$	22,240,671	31,671,028	40,829,857
Fuel and purchased electricity used..... \$	8,552,300	11,808,803	13,917,980
Process supplies used..... \$	11,065,124	15,323,762	13,670,771
Estimated gross value of matte exported and Canadian refinery products ² \$	88,444,103	133,715,083	142,228,550
Value of production (net)..... \$	68,826,679	106,582,518	114,639,799

1. Does not include data for mines, power plants, etc., operated by subsidiary companies.

2. Includes value of customs material.

TABLE 129. Output from Ontario Nickel-Copper Mines and Smelters, 1946-1948

	1946	1947	1948
	(Tons of 2,000 pounds)		
Ore shipped from mines.....	8,224,751	11,138,569	11,688,146
Ore treated ¹	8,214,834	11,147,948	11,674,955
Converter copper produced in Ontario from Ontario ores ²	81,423	107,387	113,968
Nickel produced in Ontario ³	66,074	78,746	90,952
Matte and residues exported ⁴	47,426	58,162	59,013
Nickel content of matte exported.....	29,642	39,867	40,128
Copper content of matte exported.....	8,283	6,544	6,367

1. Represents the tonnage of crude ore smelted together with the tonnage of ore milled.

2. Copper content, including copper content of Ontario ores purchased, less reverts.

3. Includes nickel content of salts and oxides produced from nickel-copper ores only.

4. Less a relatively small tonnage of matte returned to Canada for retreatment.

TABLE 130. Production of Nickel¹ from Canadian Ores, 1929-1948

Year	Tons	Value	Year	Tons	Value
		\$			\$
1929.....	55,133	27,115,461	1939.....	113,053	50,920,305
1930.....	51,884	24,455,133	1940.....	122,779	59,822,591
1931.....	32,833	15,267,453	1941.....	141,129	68,656,795
1932.....	15,164	7,179,862	1942.....	142,606	69,998,427
1933.....	41,632	20,130,480	1943.....	144,009	71,675,322
1934.....	64,344	32,139,425	1944.....	137,299	69,204,152
1935.....	69,258	35,345,103	1945.....	122,565	61,982,133
1936.....	84,870	43,876,525	1946.....	96,062	45,385,155
1937.....	112,453	59,507,176	1947.....	118,626	70,650,764
1938.....	105,286	53,914,494	1948.....	131,740	86,904,235

1. Usually includes a relatively small quantity of nickel recovered annually from silver-cobalt ores; Canadian nickel production comes entirely from Ontario ores with the exception of 1937 when a relatively small tonnage of nickel ore was exported from a property in British Columbia.

TABLE 131. Production of New Nickel¹, by Months, 1946-1948

Month	1946	1947	1948
(Tons of 2,000 pounds)			
January.....	7,001	9,766	10,829
February.....	6,306	8,609	9,732
March.....	7,940	10,057	10,513
April.....	9,360	10,065	13,262
May.....	7,462	9,927	11,410
June.....	7,693	9,877	10,434
July.....	8,226	9,832	10,450
August.....	7,819	9,961	9,049
September.....	8,084	7,610	9,891
October.....	8,721	11,536	10,322
November.....	8,847	9,914	12,755
December.....	8,604	11,472	13,093
Total.....	96,063	118,626	131,740

1. Refined nickel plus recoverable nickel in matte, etc., exported.

TABLE 132. Imports and Exports of Nickel, 1947 and 1948

	1947		1948	
	Quantity	Value	Quantity	Value
	pound	\$	pound	\$
IMPORTS:				
Nickel and nickel silver in ingots.....	184,003	56,782	83,283	17,512
Nickel rods for wire (90% nickel).....	5,230	3,522	-	-
Nickel in bars and rods, strips and sheets.....	2,164,014	1,135,520	2,434,594	1,372,580
Nickel-silver bars, rods and strips.....	294,638	133,129	85,435	56,995
Nickel-chromium in bars.....	104,978	86,654	123,865	123,352
Nickel, manufactures of, not plated.....	-	282,954	-	252,642
Nickel-plated household hollow-ware.....	-	24,703	-	18,378
Nickel household hollow-ware.....	-	-	-	-
Nickel-plated ware, n.o.p.....	-	2,865,488	-	3,332,640
Total Nickel and its Products.....	-	4,588,752	-	5,174,099
EXPORTS:				
Nickel in matte or speiss.....	79,533,600	18,292,728	101,602,300	24,320,922
Nickel in oxide.....	13,069,200	3,075,068	19,583,300	5,020,167
Nickel, fine.....	141,511,200	39,074,966	142,494,100	44,460,782
Total Nickel.....	-	60,442,762	-	73,801,871

TABLE 133. Production, Consumption and Exports of Nickel, 1939-1948

Year	Production in Canada (all forms, including content in oxide and in matte exported)	Consumption of refined nickel in Canada	Exports		
			Nickel contained in matte or speiss	Nickel in oxide	Refined Nickel
(Tons of 2,000 pounds)					
1939.....	113,053	635	47,051	2,425	67,914
1940.....	122,779	1,509	38,484	3,864	82,168
1941.....	141,129	3,464	42,616	7,240	87,739
1942.....	142,606	4,509	41,263	9,224	88,308
1943.....	144,009	3,440	36,415	3,892	95,240
1944.....	137,299	2,350	33,848	1,242	97,509
1945.....	122,565	2,410	28,295	1,758	78,168
1946.....	96,063	1,820	30,625	517	80,797
1947.....	118,626	1,670	39,767	6,535	70,755
1948.....	131,740	1,887	50,801	9,792	71,247

TABLE 134. World Production of Nickel, 1944-1948 (from the "Annual Report of the American Bureau of Metal Statistics")

	1944	1945	1946	1947	1948
	(Tons of 2,000 pounds)				
Canada ¹	137,299	122,565	96,063	118,626	131,740
New Caledonia ²	9,200	5,400	4,200	3,900	—
Norway.....	583	606	—	—	—
United States ³	990	1,155	352	646	883
Cuba ⁴	5,100	12,000	12,391	2,220	—
Finland.....	345	4,079	—	—	—
Japan.....	410	185	—	—	—

1. Production in all forms from Canadian ores.

2. Nickel content of ore produced, estimated at 3.5% Ni. from which recovery in matte of 75% Ni. may be no more than 60%.

3. By-product in electrolytic refining of copper.

4. Nickel content of oxide.

TABLE 135. Total Production of New Copper in Canada, by Provinces and Method of Computation, 1947 and 1948

	1947		1948	
	Tons	Value	Tons	Value
		\$		\$
BY PROVINCES:				
Quebec.....	42,560	17,356,259	48,813	21,819,473
Ontario.....	113,934	46,018,544	120,383	53,384,560
Manitoba.....	15,316	6,245,817	18,960	8,475,160
Saskatchewan.....	33,151	13,518,963	31,074	13,890,237
British Columbia.....	20,900	8,402,305	21,502	9,590,326
Total.....	225,861	91,541,888	240,732	107,159,756
BY SOURCES ¹ :				
In blister and anode copper produced.....	198,414	80,913,288	212,817	95,129,075
In ores, concentrates and copper matte exported ²	20,904	8,403,752	21,548	9,611,174
In nickel-copper matte exported.....	6,543	2,224,848	6,367	2,419,507
Total.....	225,861	91,541,888	240,732	107,159,756

1. Where computed.

2. Contains a relatively small quantity of copper contained in gold and silver ores shipped to Canadian smelters.

TABLE 136. Production of Copper¹, by Months, 1946-1948

Month	1946	1947	1948
	(Tons of 2,000 pounds)		
January.....	15,734	14,360	20,345
February.....	13,559	15,039	19,017
March.....	15,950	21,324	20,974
April.....	15,725	19,855	20,810
May.....	15,284	30,566	20,640
June.....	14,992	19,281	20,397
July.....	15,292	19,608	19,412
August.....	14,768	17,928	18,127
September.....	14,225	17,478	19,589
October.....	15,046	22,530	20,356
November.....	17,471	18,930	20,234
December.....	15,922	18,962	20,831
Total.....	183,968	225,861	240,732

1. Blister copper produced in Canada plus recoverable copper in concentrates, matte, etc., exported from all types or ores.

TABLE 137. Production of Copper from Ontario Ores Only, 1929-1948

Year	Tons	Value	Year	Tons	Value
		\$			\$
1929.....	44,440	14,622,572	1939.....	164,215	32,637,305
1930.....	63,859	15,187,259	1940.....	173,966	34,742,229
1931.....	56,441	9,096,463	1941.....	166,915	33,192,644
1932.....	38,528	4,407,928	1942.....	154,141	30,625,404
1933.....	72,752	10,118,847	1943.....	138,920	32,232,027
1934.....	102,530	14,822,704	1944.....	142,654	33,845,632
1935.....	126,014	19,295,965	1945.....	119,725	29,771,633
1936.....	143,907	26,898,920	1946.....	89,712	22,502,528
1937.....	161,020	41,716,364	1947.....	113,933	46,018,544
1938.....	154,515	30,405,500	1948.....	120,383	53,384,560

Note. Almost entirely from nickel ores.

TABLE 138. Production of Copper, According to Origin of Ores and by Provinces, 1947 and 1948

Province	From copper-gold-silver ores	From nickel-copper ores	From gold and other ores	Total
	(pounds)			
1947				
Quebec.....	84,770,146	-	351,282	85,121,428
Ontario.....	-	227,860,515	7,098	227,867,613
Manitoba.....	30,631,768	-	-	30,631,768
Saskatchewan.....	66,301,926	-	-	66,301,926
British Columbia.....	41,766,876	-	33,482	41,800,358
Canada.....	223,470,716	227,860,515	391,862	451,723,093
1948				
Quebec.....	97,611,653	-	14,626	97,626,279
Ontario.....	-	240,374,476	391,330	240,765,806
Manitoba.....	37,920,181	-	-	37,920,181
Saskatchewan.....	62,148,713	-	-	62,148,713
British Columbia.....	42,894,675	-	108,312	43,002,987
Canada.....	240,575,222	240,374,476	514,268	481,463,966

TABLE 139. Production of Refined Copper, 1939-1948

Year	Tons	Year	Tons
1939.....	231,684	1944.....	256,244
1940.....	261,878	1945.....	228,861
1941.....	278,224	1946.....	167,221
1942.....	268,447	1947.....	202,427
1943.....	251,495	1948.....	221,275

TABLE 140. Production of Refined Copper, by Months, 1946-1948

Month	1946	1947	1948
	(Tons)		
January.....	14,191	13,348	16,381
February.....	13,041	11,520	15,685
March.....	13,242	13,886	18,561
April.....	15,260	16,827	20,108
May.....	14,316	18,803	19,618
June.....	13,125	18,696	19,288
July.....	14,189	19,886	19,490
August.....	13,844	18,045	18,805
September.....	14,393	17,825	17,634
October.....	14,702	18,373	17,852
November.....	14,237	18,036	18,925
December.....	12,681	17,182	18,928
Total.....	167,221	202,427	221,275

TABLE 141. Imports and Exports of Copper, 1947 and 1948

	1947		1948	
	Pounds	\$	Pounds	\$
IMPORTS:				
Copper in blocks, pigs and ingots.....	1,100	304	1,500	853
Copper, scrap.....	89,900	13,682	85,000	13,016
Copper in bars or rods for the manufacture of trolley, telegraph and telephone wires, electric wires and electric cables.....	3,470,900	646,743	3,931,600	778,340
Copper bars or rods, n.o.p.....	343,000	121,520	137,900	51,584
Copper in strips, sheets or plates.....	1,434,900	513,884	253,700	91,588
Copper tubing, not manufactured.....	1,603,100	678,287	1,150,400	479,245
Copper rollers for wall paper.....	-	32,430	-	67,714
Copper wire, n.o.p.....	548,224	245,574	496,693	219,384
Copper wire cloth, woven.....	-	3,343	-	6,286
Copper manufactures, n.o.p.....	-	689,844	-	704,558
Copper sub-acetate.....	1,825	596	1,700	584
Copper sulphate (blue vitriol).....	1,279,110	132,991	454,672	51,230
Total.....	-	3,079,198	-	2,464,382
EXPORTS:				
Copper, fine, contained in ore, matte, regulus, etc.....	58,187,500	9,310,000	57,111,500	9,137,840
Copper, old and scrap.....	11,388,600	1,804,129	10,491,700	1,881,698
Copper in ingots, bars, cakes, slabs and billets.....	174,956,400	33,485,810	232,338,800	50,682,650
Copper in rods, strips, sheets and plates.....	39,371,500	8,315,610	55,937,600	13,503,801
Copper tubing.....	1,595,800	535,597	1,341,200	504,408
Copper wire and cable, insulated.....	-	2,191,939	-	2,009,523
Copper wire, bare.....	-	3,303,809	-	1,070,226
Copper wire, screen.....	-	292,501	-	189,200
Copper manufactures, n.o.p.....	-	58,644	-	56,238
Total.....	-	59,298,039	-	79,035,584

TABLE 142. Production of Primary Copper, Exports and Imports, 1939-1948

Year	Production in Canada	Exports			Imports
		Copper in ore, matte, etc.	Blister copper	Refined copper ingots, bars, etc.	Refined copper
(Tons of 2,000 pounds)					
1939	304,413	60,750	15,556	165,819	3
1940	327,797	52,601	15,874	154,502	6
1941	321,658	47,769	11,962	126,424	-
1942	301,831	34,047	6,455	98,617	-
1943	287,595	36,210	4,274	64,333	-
1944	273,535	27,989	-	135,233	2
1945	237,457	19,295	-	129,349	-
1946	183,968	17,628	-	101,414	-
1947	225,861	29,094	-	87,478	-
1948	240,732	28,556	-	116,169	-

Note. Primary copper represents blister copper produced in Canada plus recoverable copper in ores exported.

TABLE 143. Production of Refined Copper, Consumption, Imports and Exports, 1939-1948

Year	Production in Canada	Domestic consumption	Exports	Imports	Stocks at end of period
(Tons of 2,000 pounds)					
1939	231,684	57,000	165,819	3	(Oct. 31) 15,418
1940	261,878	107,000	154,502	6	17,572
1941	278,224	142,000	126,424	-	18,312
1942	268,447	183,000	98,617	-	21,446
1943	251,495	176,000	64,333	-	27,710
1944	256,244	122,000	135,233	2	26,600
1945	228,861	90,000	129,349	-	16,760
1946	167,221	80,500	101,414	-	19,390
1947	202,427	109,210	87,478	-	10,931
1948	221,275	109,844	103,218	-	13,956

TABLE 144. World Production of Copper, 1946, 1947 and 1948, by Countries According to Origin of the Ore (From the "Annual Report of The American Bureau of Metal Statistics")

Country	1946	1947	1948
(Tons of 2,000 pounds)			
United States.....	630,868	874,105	855,198
Mexico.....	64,693	72,675	63,928
Canada.....	183,968	225,861	241,942
Cuba.....	12,340	14,600	16,800
Newfoundland.....	4,900	4,250	4,550
Bolivia.....	6,754	6,879	7,293
Chile.....	397,972	470,318	490,467
Peru.....	27,108	24,793	19,917
Ecuador.....	2,886	158	450
Total America.....	1,304,489	1,693,639	1,700,545
Austria.....	138	285	1,082
Finland.....	19,400	19,200	25,713
Germany.....	516	263	401
Norway.....	13,500	16,212	15,800
Sweden.....	13,400	11,900	-
Japan.....	16,934	14,489	18,000
India.....	18,889	24,127	28,353
Turkey.....	7,068	6,643	6,567
Philippines.....	10,979	11,111	12,102
Cyprus.....	-	-	2,300
Belgian Congo.....	2,950	17,400	21,500
Rhodesia.....	158,604	166,271	171,387
Southwest Africa.....	204,822	218,222	234,647
Union of South Africa.....	4,575	6,616	6,616
Australia.....	30,000	32,400	32,300
	19,886	14,698	14,000

TABLE 145. Canadian Copper Ore Reserves as Officially Reported (from American Bureau of Metal Statistics)

	Year	Province	Short tons ore	Average grade %	Short tons copper
Amulet Dufault	1948	Quebec.....	1,364,404	5.35	73,000
East Sullivan.....	1948	Quebec.....	4,372,000	2.12	92,700
Falconbridge.....	1948	Ontario.....	14,007,500	0.93	130,300
Granby Consolidated (Allenby).....	1948	British Columbia.....	7,606,000	1.25	95,100
Hudson Bay.....	1947	Manitoba.....	22,700,000	3.00	681,000
International Nickel.....	1948	Ontario.....	246,177,000	1	7,503,000
Noranda.....	1948	Quebec.....	19,485,900	2.15	418,900
Normetal.....	1948	Quebec.....	1,625,900	3.51	57,100
Quemont.....	1947	Quebec.....	9,431,000	1.49	140,500
Sherritt-Gordon.....	1948	Manitoba.....	762,100	2.55	19,400
Waite Amulet "F" and "C" ore bodies	1948	Quebec.....	80,000	2.31	1,800

1. Copper-nickel content.

TABLE 146. Production of Metals of the Platinum Group from Ontario Copper-Nickel Ores, 1939-1948¹

Year	Platinum ²		Palladium ³	
	Fine ounces	\$	Fine ounces	\$
1939.....	148,877	5,221,712	135,402	4,199,622
1940.....	108,464	4,239,424	91,522	3,520,746
1941.....	124,257	4,747,860	97,432	3,396,304
1942.....	285,188	10,897,033	222,573	8,279,221
1943.....	219,706	8,458,681	126,004	5,233,068
1944.....	157,523	6,064,635	42,929	1,960,085
1945.....	208,234	8,017,010	458,674	18,671,074
1946.....	121,771	7,672,791	117,566	5,162,801
1947.....	94,570	5,582,467	110,332	4,387,740
1948.....	121,162	10,601,675	148,343	6,295,132

1. Prior to 1945 the figures reported were the refined metals recovered and the contents of concentrates sold each year. The figures for 1945 represent the metal content of platinum metals concentrates produced, together with adjustment of previous figures to this basis for the years 1938 through 1944.

2. In addition, a relatively small quantity of alluvial platinum is usually recovered annually in British Columbia; such recovery in 1943 totalled 7 ounces valued at \$270; nil since 1943.

3. Includes other platinum metals except platinum and represents the entire Canadian production.

TABLE 147. Production of Selenium and Tellurium from Nickel-Copper Ores, 1939-1948

Year	Selenium		Tellurium	
	Pounds	Value	Pounds	Value
		\$		\$
1939.....	126,930	224,539	-	-
1940.....	136,350	260,429	3,491	5,607
1941.....	142,498	272,171	11,453	18,394
1942.....	76,000	145,920	9,500	15,200
1943.....	82,000	143,500	8,600	15,050
1944.....	65,000	117,000	9,900	17,325
1945.....	168,000	322,560	-	-
1946.....	270,606	492,503	14,200	21,868
1947.....	146,406	273,779	6,169	10,796
1948.....	108,989	217,978	8,739	15,293

TABLE 148. Production of Gold and Silver from Nickel-Copper Ores, 1939-1948

Year	Gold		Silver	
	Fine ounces	Value	Fine ounces	Value ¹
		\$		\$
1939.....	77,094	2,786,177	2,496,632	1,010,886
1940.....	90,863	3,498,225	2,803,052	1,072,167
1941.....	77,960	3,001,460	2,633,815	1,007,698
1942.....	70,861	2,728,148	2,238,177	943,839
1943.....	55,776	2,147,376	1,648,888	746,122
1944.....	55,286	2,128,472	1,828,978	786,461
1945 ²	91,369	3,528,102	1,735,143	815,417
1946.....	51,490	1,892,257	1,205,664	1,008,538
1947.....	43,672	1,528,520	1,434,652	1,032,949
1948.....	39,752	1,391,320	1,404,338	1,053,254

1. Estimated.

2. Includes 26,589 ounces of gold and 84,614 ounces of silver recovered from platinum metals concentrates in foreign plants in previous years and not previously recorded.

TABLE 149. Total Employees and Salaries and Wages Paid by Nickel-Copper Mines, Smelters and Refineries, 1948

	Administrative and office employees				Workmen			
	Male	Female	Total	Total salaries	Male	Female	Total	Total wages
	(Number)			\$	(Number)			\$
Mines.....	481	28	509	2,058,550	6,408	3	6,411	18,434,370
Smelters and refineries.....	765	135	900	3,383,775	6,409	4	6,413	16,953,162
Total.....	1,246	163	1,409	5,442,325	12,817	7	12,824	35,387,532

TABLE 150. Workmen, by Sex and Months, Entire Industry, 1946-1948

Month	1946		1947		1948	
	Male	Female	Male	Female	Male	Female
	(number)					
January.....	8,343	—	10,713	7	12,206	8
February.....	8,388	—	11,066	7	12,264	8
March.....	8,389	—	11,304	7	12,345	9
April.....	8,436	—	11,284	7	12,197	8
May.....	8,703	—	11,159	8	12,428	8
June.....	8,782	—	11,410	9	13,050	7
July.....	8,871	6	11,908	9	13,095	10
August.....	9,007	4	11,692	8	12,832	10
September.....	9,183	3	11,786	8	13,140	6
October.....	9,511	6	12,119	8	13,398	6
November.....	10,055	4	12,547	8	13,366	6
December.....	10,388	4	12,392	8	13,351	6
Average.....	9,005	4	11,617	9	12,817	7

TABLE 151. Workmen, by Months, in Nickel-Copper Mines Only, 1948¹

Month	Mine		Mill
	Surface		Underground
	Male	Female	
	(number)		Male
January.....	2,041	4	3,983
February.....	2,045	4	3,899
March.....	2,041	5	3,835
April.....	2,000	4	3,739
May.....	2,060	4	3,829
June.....	2,135	3	4,123
July.....	2,089	6	4,258
August.....	2,095	6	4,098
September.....	2,125	2	4,155
October.....	2,109	2	4,446
November.....	2,065	2	4,477
December.....	2,042	2	4,425
Average.....	2,072	3	4,107

1. Included in Table 150.

TABLE 152. Workmen, by Months, in Nickel-Copper Smelters and Refineries Only, 1948¹

Month	Male	Female	Month	Male	Female
	(number)			(number)	
January.....	6,055	4	July.....	6,533	4
February.....	6,087	4	August.....	6,428	4
March.....	6,249	4	September.....	6,621	4
April.....	6,244	4	October.....	6,594	4
May.....	6,321	4	November.....	6,572	4
June.....	6,562	4	December.....	6,631	4
			Average.....	6,409	4

1. Included in Table 151.

TABLE 153. Specified Taxes Paid by the Nickel-Copper Mining, Smelting and Refining Industry, 1947 and 1948¹

	1947	1948
	\$	\$
Dominion income tax, including tax on non-operating revenue.....	6,211,428	9,187,811
Dominion excess profits tax.....	1,794,641	51,361
Total provincial taxes.....	2,139,212	2,890,101
Total municipal taxes.....	375,041	426,484
Grand Total Taxes Paid.....	10,520,322	12,555,757

1. Includes data relating only to companies which conducted both mining and smelting operations.

TABLE 154. Miscellaneous Expenditures by the Nickel-Copper Mining, Smelting and Refining Industry, 1946-1948

	1946	1947	1948
	\$	\$	\$
Workmen's compensation.....	319,020	455,173	628,455
Silicosis assessment.....	61,708	47,673	73,552
Unemployment insurance.....	127,657	152,728	203,916
Aggregate cost of all supplies purchased.....	17,557,372	32,488,891	39,217,376
Aggregate cost of plant and equipment purchased.....	2,904,456	349,734	1,053,194

CHAPTER FIVE

MISCELLANEOUS METAL MINING INDUSTRIES

Including General Statistics Relating to the Industries in this Group and Commodity Statistics Showing any Production by Provinces and Prices on:

Aluminum	Chromium	Selenium
Antimony	Iron and steel	Tantalum-Columbium
Barium	Indium	Tellurium
Beryllium	Magnesium	Thallium
Bismuth	Manganese	Tin
Cadmium	Mercury	Titanium (ilmenite)
Calcium	Molybdenum	Tungsten
Cerium	Pitchblende	Vanadium

General Review

The mining of certain metal-bearing ores, other than those commonly classified as gold, silver, copper, nickel, cobalt, lead and zinc, have been grouped, for statistical purposes, as a single industry by the Dominion Bureau of Statistics. Their production in some instances is confined to a relatively few operators and the annual extraction of certain types often fluctuates in an erratic manner according to demand and supply. Included in this report, with the finally-revised statistics relating to the Canadian production of these ores or metals, are notes and statistical data pertaining to various rare or semi-rare metals or metalliferous ores produced in other countries. Metals and metal-bearing ores produced in Canada during 1948 and classified as miscellaneous include antimony, barium, bismuth, cadmium, calcium, chromite, iron ore, magnesium, manganese ore, molybdenite, pitchblende, selenium, tellurium, titanium ore, tin and tungsten concentrates. In addition to particulars relating to these metals or minerals, the bulletin contains notes of a summary nature on aluminum, beryllium, mercury, vanadium, and a few of the rarer metals.

It should be noted that the majority of the metals listed above as Canadian products and including bismuth, cadmium, selenium and tellurium, represent by-products recovered in the refining of lead, zinc or copper and, for this reason, such statistics as relate to their production in Canada are included with those of either the silver-lead-zinc mining industry, the copper-gold-silver mining industry, or the non-ferrous smelting and refining industry.

There were 25 firms in the miscellaneous metals mining industry in 1948; employees numbered 1,296 to whom \$3,878,527 were paid in salaries and wages. The cost of fuel, electricity, process supplies, freight and ore treatment amounted to \$4,100,667. The gross value of production was \$8,725,661 in 1948 compared with \$10,182,339 in the preceding year.

TABLE 155. Principal Statistics¹ of the Miscellaneous Metal Mining Industry, 1947 and 1948

	1947	1948
Number of firms.....	18	25
Number of plants.....	19	26
Number of employees:		
Administrative and office.....	119	158
Workmen.....	1,064	1,138
Total.....	1,183	1,296
Salaries and wages:		
Salaries.....	\$ 378,856	439,847
Wages.....	\$ 2,592,047	3,438,680
Total.....	\$ 2,970,903	3,878,527
Value of production (gross).....	\$ 10,182,339	8,725,661
Cost of fuel and electricity.....	\$ 892,619	890,362
Process supplies used.....	\$ 619,760	1,303,681
Smelter charges.....	\$ 82,091	1,320
Freight.....	\$ 2,877,647	1,905,304
Value of production (net).....	\$ 5,710,222	4,624,994

1. Does not include data relating to smelters and refineries or to mining in the Northwest Territories. Data for 1947 and 1948 cover only chromium, iron, manganese, molybdenum, titanium and tungsten.

TABLE 156. Average Number of Workmen, by Months, 1947 and 1948

Month	1947			1948					
	Surface		Under-ground	Mill	Surface			Mill	
	Male	Female		Male	Male	Female	Under-ground	Male	Female
January.....	678	5	84	105	662	8	187	101	1
February.....	691	6	100	98	649	9	206	102	1
March.....	722	6	94	118	683	11	191	105	1
April.....	757	6	94	152	718	13	189	115	1
May.....	788	5	114	153	725	14	202	133	1
June.....	818	5	163	172	945	16	199	142	1
July.....	850	5	153	178	950	14	182	134	1
August.....	872	5	167	183	975	14	184	134	1
September.....	843	5	170	174	964	21	191	141	1
October.....	806	5	170	181	864	31	197	148	1
November.....	759	5	193	157	751	31	225	146	1
December.....	697	3	108	131	708	30	195	108	1
Average.....	774	5	135	150	799	18	195	125	1

ALUMINUM

Although there is no bauxite (the ore of aluminum) in Canada, the Canadian aluminum industry is exceeded in size only by that of the United States. The principal factor favouring the establishment of the industry in Canada is abundant and low-cost hydro-electric power at points where necessary raw materials can be cheaply and conveniently assembled.

The production of 367,079 short tons of aluminum ingots in 1948 was 22.7 per cent greater than in the previous year, but still far below the peak production of 1943 when nearly a half-million tons of ingots were made.

Production in Canada is entirely by Aluminum Company of Canada, Limited, which has its alumina plant at Arvida and reduction plants at Arvida, Ile Maligne, Shawinigan

Falls, La Tuque, and Beauharnois, all in the province of Quebec. These reduction plants have a total rated capacity of about 550,000 tons of aluminum a year, or over 20 per cent of the estimated productive capacity of the world. In 1948 operations were concentrated at Arvida, Ile Maligne and Shawinigan Falls.

Fabricating plants of this company are located at Kingston and Etobicoke in Ontario, and at Arvida and Shawinigan Falls in Quebec. They consume only a small part of the company's production as the Aluminum Company of Canada is primarily a producer and exporter of aluminum ingot.

The principal imported raw materials used in the Canadian aluminum industry are bauxite from British Guiana, coal and coke from the United States, fluorspar from Newfoundland, and cryolite from Greenland and the United States.

Aluminum is finding an increasingly wide field of usefulness. It is available from fabricating plants in many forms such as sheets, foil, castings, forgings, rolled and extruded shapes, tubes, rods, wire, powder, and paste. Because of its light weight and strength when alloyed, it is widely used in the making of aircraft and for many other purposes where lightness of the structural metal is particularly desirable. Large tonnages are used for making cable for transmission of electricity, and for making cooking utensils and containers for food and beverages. It is finding an increasing number of architectural uses, being employed for window frames, screens, garage doors, heating and ventilating ducts, venetian blinds, and ornamental spandrels on buildings. Small dwelling houses are also being built of aluminum. These uses have increased so rapidly in the past few years that they now constitute the principal use of aluminum insofar as tonnage is concerned.

In the transportation industry, aluminum is used in frames and wheels of cars, trucks and buses, and for the making of pistons. A new development in this field is the use of aluminum tubing for oil, gasoline, and water lines. Aluminum is also used to an increasing extent in the construction of railway equipment, in the fittings of ships, and for the construction of canoes and small boats.

Aluminum is being made into nails and into barbed wire. There has been a very large increase in the use of aluminum foil for wrapping food products, particularly frozen foods. In pre-war years Germany controlled the greater part of the trade in foil but Canada is now supplying a large part of that market.

The price of aluminum ingot was 14 cents per pound in 1948. Effective January 1, 1948, the United States import tariff on aluminum metal and alloys was reduced from 3 cents to 2 cents per pound.

TABLE 157. Production, Consumption, Imports and Exports of Aluminum Ingots, 1939-1948

Year	Production	Consumption in Canada	Exports	Imports
(Tons of 2,000 pounds)				
1939.....	82,840	10,544	70,578	189
1940.....	109,144	18,197	86,536	133
1941.....	213,873	19,717	192,757	3
1942.....	340,596	32,700	314,463	-
1943.....	495,749	40,100	375,383	1
1944.....	462,065	38,400	295,226	66
1945.....	215,712	40,800	382,286	51
1946.....	194,117	33,825	187,336	246
1947.....	299,066	50,265	230,175	616
1948.....	367,079	65,433	328,551	25

TABLE 158. Imports of Aluminum and Bauxite, 1947 and 1948

Item	1947		1948	
	Cwt.	Value	Cwt.	Value
		\$		\$
Alumina.....	3,694	60,997	2,962	45,793
Bauxite ore.....	27,853,853	8,565,875	40,169,876	9,884,001
Cryolite.....	145,167	1,133,192	133,811	1,031,813
Aluminum:				
Pigs, ingots and blocks.....	12,320	126,305	492	10,581
Scrap.....	2,538	13,051	4,134	21,918
Angles, channels and beams.....	4,206	308,877	5,039	428,334
Bars, rods and wire.....	1,006	30,106	24,530	587,969
Leaf.....	-	510,701	-	165,454
Pipes and tubes.....	804	63,574	1,659	78,756
Plates, sheets and strips.....	81,387	2,261,158	44,585	1,367,683
Powder.....	414	23,838	491	32,204
Wire and cable.....	10	411	56	3,267
Household hollow ware.....	-	743,667	-	110,432
Manufactures n.o.p.....	-	3,340,915	-	3,893,400

Cwt. = 100 pounds.

TABLE 159. Exports of Aluminum, 1947 and 1948

Item	1947		1948	
	Cwt.	Value	Cwt.	Value
		\$		\$
Aluminum scrap.....	216,035	1,934,681	456,794	5,141,641
Aluminum wire and cable.....	-	2,529,927	-	5,521,471
Aluminum manufactures, n.o.p.	-	3,648,551	-	3,323,163
Aluminum in bars, blocks, ingots and blooms.....	4,274,317	52,610,741	6,542,154	84,191,712
Aluminum in rods, sheets and circles.....	77,967	2,068,164	123,364	3,403,699
Aluminum kitchen utensils and hollow ware.....	-	1,163,510	-	464,742

TABLE 160. World Production of Aluminum, 1946-1948 (From the Annual Report of the American Bureau of Metal Statistics)

Country	1946	1947	1948
	(Tons of 2,000 pounds)		
United States.....	409,630	571,750	623,483
Canada.....	193,400	297,838	372,500
Total America.....	603,030	869,588	995,983
Austria.....	1,138	4,786	14,723
France.....	52,729	58,670	71,418
Germany.....	-	-	8,053
Great Britain.....	35,329	32,407	33,629
Italy.....	12,169	27,628	36,466
Norway.....	18,400	23,947	33,141
Hungary.....	2,172	3,000	5,679
Spain.....	1,110	1,065	1,200
Sweden.....	3,931	3,188	3,850
Switzerland.....	15,400	19,800	20,900
Total Europe ¹	142,378	174,491	229,059
Japan.....	3,519	2,976	7,672
India.....	3,576	3,553	3,771

1. Excluding Yugoslavia.

ANTIMONY

Since 1945 the production of antimony in Canada has been in the form of antimonial lead. The Consolidated Mining and Smelting Company of Canada, at Trail, British Columbia, produces, intermittently, alloys containing 25 per cent and 12 per cent antimony. In 1948 the antimony content of alloy produced amounted to 310,062 pounds. There has been no production of antimony ore since 1942.

The greatest single use for antimony is as an alloying element with lead, to which it adds hardness and mechanical strength, such as in the manufacture of storage batteries and cable covering. It is alloyed with tin in the manufacture of babbitt bearings, and with lead and tin in solders, foil, collapsible tubes, and type metal. Its property of expansion on cooling when alloyed makes it particularly useful in the manufacture of type metal. During the war it was used to harden the lead used in ammunition and to flame proof canvas goods used by the armed forces.

The Canadian price for antimony was about 40 cents per pound at the end of the year.

TABLE 161. Production of Antimony, 1939-1948

Year	In ores exported		Metal produced in Canada		Total	
	Pounds	\$	Pounds	\$	Pounds	\$
1939.....	25,405	3,139	1,200,180	148,330	1,225,585	151,469
1940.....	44,700	3,800	2,549,792	392,668	2,594,492	396,468
1941.....	15,292	2,141	3,169,785	443,770	3,185,077	445,911
1942.....	78	13	3,041,030	516,975	3,041,108	516,988
1943.....	-	-	1,114,166	189,408	1,114,166	189,408
1944.....	-	-	1,937,933	281,000	1,937,933	281,000
1945 ¹	-	-	1,667,951	290,557	1,667,951	290,557
1946 ¹	-	-	642,145	96,332	642,145	96,322
1947 ¹	-	-	1,150,463	384,255	1,150,463	384,255
1948 ¹	-	-	310,062	113,173	310,062	113,173

1. No refined metal in 1945-1948; figures represent antimony content of antimonial lead.

TABLE 162. Production of Antimony Metal, Consumption, Imports and Exports, 1939-1948

Year	Production in Canada	Consumption in Canada	Imports	Exports ¹
(Tons of 2,000 pounds)				
1939.....	600	426	119	275
1940.....	1,275	558	118	359
1941.....	1,585	955	1	676
1942.....	1,521	1,187	-	166
1943.....	557	1,303	120	6
1944.....	968	1,515	779	-
1945.....	-	778	517	-
1946.....	-	871	455	-
1947.....	-	1,189	1,440	-
1948.....	-	812	547	-

1. Shipped for export; data not available from customs' records.

TABLE 163. Consumption of Antimony Metal¹, by Industries, 1944-1948

Industry	1944	1945	1946	1947	1948
(Tons of 2,000 pounds)					
White metal foundries.....	1,191	614	743	948	700
Electrical apparatus plants.....	183	114	78	213	56
Brass foundries.....	10	9	21	11	13
Non-ferrous smelters.....	76	1	-	-	-
Silverware factories.....	8	9	29	17	23
Ammunition plants.....	41	26	-	-	-
Miscellaneous.....	6	5	5	-	20
Total.....	1,515	778	871	1,189	812

1. Includes some antimony in antimonal lead.

-BARIUM

Production (shipments) of barium metal in Canada in 1948 totalled 2,552 pounds valued at \$7,988 compared with 568 pounds nominally valued at \$1,278 in 1947. The commercial production of barium metal was introduced in Canada by the Dominion Magnesium Limited at Haley, Ontario, in 1947.

The price of barium metal is now about \$3.00 per pound.

BERYLLIUM

Beryllium is not produced in Canada, but there are several occurrences of beryl in pegmatite dikes. No mining of beryl ore is being done at present.

In Ontario, intermittent work was done prior to 1941 on a beryl pegmatite in Lyndoch township, Renfrew county. A few tons of clean cobbed crystals were obtained, and about 200 tons of milling grade rock was stockpiled. Most of the work on the property was done by the present owners, Canadian Beryllium Mines and Alloys, Limited, 901 Royal Bank Building, Toronto, who, however, have reported no sales. A detailed examination of the main easterly workings, made in 1943 by the Bureau of Mines, Ottawa, and the Metals Controller's Office, indicated an average content of 0.188 per cent beryl in the total rock excavated, with a maximum for the richest quarry sections of 1.24 per cent. Grade of selected clean beryl crystals was 10.41 per cent BeO.

In Manitoba a little work was done several years ago on beryl showings in pegmatites opened originally for feldspar and lithium minerals in the Winnipeg River and Oiseau (Bird) River areas, but no shipments were reported.

In the Northwest Territories, exploration in the area north and east of the Yellowknife gold camp has disclosed numerous occurrences of beryl in pegmatites which also contain lithium minerals and tantalite-columbite. Some of these are considered to be of possible economic interest.

In Quebec, scattered occurrences of beryl are known in La Corne and Preissac townships, Abitibi county, often associated with molybdenite. None of these, however, is believed to be of economic importance.

Beryllium is used chiefly in the form of beryllium-copper alloys, the most important of which contains about 2 per cent beryllium. A beryllium-aluminum alloy containing 5 per cent beryllium is used as a deoxidizer in making aluminum-magnesium products. Straight beryllium metal has only limited applications, notably for the windows of X-ray tubes, where it is used for its transparency to the rays.

Ground beryl is used as a batch ingredient in sparkplugs and other ceramic specialties, to which it imparts high electrical and impact resistance and transverse strength. Some is also used in cooking utensil enamels. Consumption for such uses in the United States is estimated at about 100 tons a year.

New York price quotations, at the end of the year, for beryllium ore, f.o.b. mine, were \$26-\$30 per unit of BaO, 8 to 12 per cent.

BISMUTH

Bismuth was produced in Canada in 1948 by the Consolidated Mining and Smelting Company of Canada Limited, at Trail, British Columbia, and by Molybdenum Corporation of Canada Limited at La Corne, Quebec. The production at Trail is from the residues resulting from the electrolytic refining of lead bullion. The La Corne plant closed late in 1947, but shipments were made from the stockpile. Deloro Smelting and Refining Ltd. shipped some bismuth in the form of bismuth-silver-lead alloy.

Bismuth is too brittle to be used alone, but its alloys have many uses, such as in the manufacture of sprinkler plugs and other fire-protection devices, electrical fuses, low melting solders, dental amalgams, and tempering baths for small tools. Like antimony, bismuth expands on solidification and retains this property in a number of alloys, and is used in type metal. This group of bismuth-lead-tin-cadmium alloys is used by the airplane and automotive industries to prepare spotting fixtures, to make moulds for electroforming, to fill thin-walled tubing during bending, and to spray-coat wooden patterns and core boxes in foundries.

According to the "E & M J Metal and Mineral Markets", the price of bismuth during 1948 was \$2.00 per pound in ton lots.

TABLE 164. Production of Primary Bismuth in All Forms¹, 1939-1948

Year	Pounds	\$	Year	Pounds	\$
1939.....	409,449	466,362	1944.....	123,875	154,844
1940.....	58,529	81,004	1945.....	189,815	260,047
1941.....	7,511	10,396	1946.....	240,504	336,706
1942.....	347,556	479,627	1947.....	284,372	560,213
1943.....	407,597	562,484	1948.....	240,242	480,484

1. Refined metal plus bismuth content of bullion exported.

TABLE 165. Production of Bismuth Metal, Consumption, Imports and Exports, 1939-1948

Year	Production	Domestic consumption	Exports ¹	Imports
	(Tons of 2,000 pounds)			
1939.....	205	14	64	5
1940.....	20	12	77	-
1941.....	-	16	51	-
1942.....	159	36	199	-
1943.....	204	65	73	-
1944.....	62	46	25	-
1945.....	95	35	41	-
1946.....	120	40	95	-
1947.....	142	71	61	-
1948.....	120	44	79	-

1. Shipped for export by Canadian producers.

TABLE 166. Consumption of Bismuth Metal, by Industries, 1944-1948

Industry	1944	1945	1946	1947	1948
	(Tons of 2,000 pounds)				
Medicinals and pharmaceuticals.....	23	15	11	44	28
White metal foundries.....	20	16	23	20	15
Miscellaneous.....	3	4	6	7	1
Total.....	46	35	40	71	44

CADMIUM

Cadmium is recovered in Canada as a by-product of the electrolytic refining of zinc. The zinc refineries at Trail, British Columbia, and Flin Flon, Manitoba, both produce metallic cadmium. In British Columbia the greater portion of cadmium is derived from the lead-zinc ores of the Sullivan mine, but also a considerable amount of cadmium is recovered from the customs ores shipped from various mines in the province to the smelter of the Consolidated Mining & Smelting Company of Canada, Limited, at Trail. Cadmium is found in the copper-gold-zinc ores of the Flin Flon deposit on the Saskatchewan-Manitoba boundary and also in the zinc concentrates shipped by Sherritt-Gordon Mines Limited to Flin Flon for smelting and refining.

Cadmium is used mainly in electroplating and in the manufacture of alloys and compounds, the most common use being as a protective coating for steel. To a much lesser extent it is used in copper alloys. The use of cadmium alloys in motor vehicle bearings and for solders has created a strong demand for the metal. Cadmium is used also in the arts, paints, ceramics, and dyeing, etc.

Cadmium is marketed in metallic form, 99.5 per cent pure and better, and as a sulphide. The principal compounds are cadmium sulphide, cadmium oxide, cadmium lithopone, and cadmium selenite.

The New York price for commercial sticks of cadmium in January, 1948, was \$1.75 per pound, but in November the price rose to \$2.00 per pound.

TABLE 167. Production of Cadmium, 1939-1948

Year	British Columbia		Manitoba		Saskatchewan	
	Pounds	\$	Pounds	\$	Pounds	\$
1939.....	799,253	563,241	73,830	52,029	66,608	46,939
1940.....	778,791	905,734	57,742	67,154	71,594	83,264
1941.....	1,081,374	1,269,533	61,085	71,714	108,832	127,769
1942.....	972,413	1,147,447	29,236	34,498	147,314	173,831
1943.....	598,673	688,474	20,985	24,130	166,955	191,998
1944.....	386,410	425,051	20,921	23,013	119,639	131,603
1945.....	510,432	505,328	27,891	27,612	107,741	106,663
1946.....	636,315	776,304	63,410	77,360	102,923	125,566
1947.....	545,638	938,497	75,030	129,052	97,866	165,330
1948.....	617,226	1,126,437	67,926	123,965	80,938	147,712

TABLE 168. Consumption and Exports of Cadmium Metal, 1939-1948

Year	Production	Domestic consumption	Exports
	(Tons of 2,000 pounds)		
1939.....	470	41	525
1940.....	454	75	529
1941.....	625	149	455
1942.....	574	207	400
1943.....	393	168	286
1944.....	263	108	192
1945.....	319	87	175
1946.....	401	96	296
1947.....	359	72	309
1948.....	383	92	275

Note. Statistics on imports are not available.

CALCIUM

The commercial production of calcium in Canada started in 1945 when the metal was recovered from lime by Dominion Magnesium Limited at its plant located at Haley, Ontario.

Calcium has found increasing use as a deoxidizer in ferrous metallurgy and as an alloy constituent with non-ferrous metals. It has been employed in the reduction of difficultly reducible metals, such as chromium, thorium, uranium, and zirconium. During the war an important calcium use was to make hydride, which is a convenient and portable source of hydrogen for inflating weather balloons. Uranium metal has been made by a reaction of calcium with chloride or oxide and by reducing the oxide with calcium hydride; the latter was perhaps the first-applied (1941) relatively large-scale production method. The uranium was, however, in the form of highly impure pyrophoric powder and was not usable in the atomic bomb project. However, by the end of 1942 acceptable metal was being turned out.

In 1948, the New York price for calcium, 97-98 per cent as cast, was \$2.05 per pound. The Canadian producer is able to sell an exceptionally high purity product for a much lower price.

TABLE 169. Production (Shipments) of Calcium Metal, 1945-1948

Year	Pounds	\$
1945.....	22,720	19,312
1946.....	53,548	68,720
1947.....	602,665	642,607
1948.....	895,203	1,723,266

CERIUM

Cerium is obtained from monazite, a monoclinic phosphate of cerium metals containing about 32 per cent cerium oxide (Ce_2O_3) and up to 18 per cent thoria (ThO_2). Monazite is distributed widely in igneous rocks throughout the world, especially in gneisses that have been intruded by pegmatites, but usually it forms only a small fraction of one per cent of the containing rock and only the natural concentrations in stream gravels and beach sands have paid for exploration. The chief commercial sources of monazite sand are beach deposits in Brazil and India. There are a few occurrences of monazite in Nova Scotia, Quebec and British Columbia, none of which is of commercial interest. It is usually found as small crystals in granites and pegmatites in the Canadian Shield and small quantities occur in association with the black sands of the Quesnel river, Lillooet district, British Columbia. In the United States there are commercial deposits in Carolina, Florida, and Idaho, and known occurrences in many other States.

In Canada, Shawinigan Chemicals, Limited, Shawinigan Falls, Quebec, has been producing cerium products from imported cerium chloride since 1940. The output is sold to the Belgo Canadian Manufacturing Company Limited, of Montreal, for the manufacture of sparking flints.

CHROMITE

The production of chromite in Canada is obtained from the deposits in the Black Lake area of Quebec.

Chromite is one of the principal alloying elements in a great variety of steels, chief of which in the amount of chromium used are the stainless and the corrosion-resistant steels. It is used in high-speed tool steels, and as a hard, toughening element in vehicle axles and frames, and in aeroplane parts. Chromium in high-temperature alloys is being used for gas turbines, jet-propulsion units, and gas engine superchargers. For metallurgical uses chromite should contain a minimum of 48 per cent Cr_2O_3 with a chrome-iron ratio of 3 to 1 or higher, and the ore should be hard and lumpy.

Chrome ore is used for making refractory bricks or materials used in basic open-hearth furnaces, in arches of furnaces, and in parts of combustion chambers of high-pressure steam boilers, etc. It is used with magnesia to make chrome-magnesia refractories, an important use in Canada being in the manufacture of brucite magnesia bricks that contain up to 30 per cent Cr_2O_3 . Refractory chromite should be fairly high in Cr_2O_3 and alumina and as low as possible in silica and iron. The ore should be hard and lumpy and not under 10-mesh, and the chromite should be present in an evenly and finely distributed form, not as coarse grains mixed with blobs of silicate. The Cr_2O_3 content is usually over 40 per cent.

The United States price, December, 1948, for chrome ore, 48 per cent Cr_2O_3 was \$35.00 per long ton, f.o.b. Atlantic ports.

TABLE 170. Production of Chromite, 1939-1948

Year	Short tons	\$	Year	Short tons	\$
1939.....	-	-	1944.....	27,054	748,494
1940.....	335	5,780	1945.....	5,755	160,752
1941.....	2,372	42,679	1946.....	3,110	61,123
1942.....	11,456	343,568	1947.....	2,162	42,159
1943.....	29,595	919,878	1948.....	1,715	33,568

TABLE 171. Imports of Chrome Ores, 1939-1948

Year	Tons	\$	Year	Tons	\$
1939.....	16,584	232,851	1944.....	39,089	618,231
1940.....	29,938	554,413	1945.....	60,691	1,154,985
1941.....	92,952	1,460,209	1946.....	15,836	269,248
1942.....	87,628	1,271,482	1947.....	98,322	3,138,229
1943.....	103,471	2,121,228	1948.....	69,183	1,937,692

TABLE 172. Imports of Chrome Ores, by Principal Countries of Supply, 1947 and 1948

Imported from	1947		1948	
	Tons	\$	Tons	\$
Union of South Africa.....	20,269	318,348	27,140	394,818
Southern Rhodesia.....	3,358	99,542	4,733	184,111
British India.....	1,122	42,931	-	-
Cuba.....	4,480	96,829	465	10,947
Turkey.....	-	-	1,232	46,429
Portuguese Africa.....	1,120	40,425	-	-
United States.....	67,973	2,540,154	31,132	1,206,837
Philippines.....	-	-	4,480	94,550
Total.....	98,322	3,138,229	69,183	1,937,692

INDIUM

Indium was commercially recovered in Canada only in 1942 when 470 troy ounces valued at \$4,710 were produced at Trail, British Columbia, by the Consolidated Mining and Smelting Company of Canada, Limited. The metal was obtained in the treatment of zinc refinery residues. The United States produces a considerable quantity of indium but data relating to entire world production are not available.

The major use has been in heavy-duty composite metal bearings employed extensively in airplanes, tanks and other mobile equipment. A zinc-indium alloy was used in applying a noncorrosive plating to hollow-steel airplane propellers. Minor uses have been in solder and brazing alloys and alloyed with gold and silver for jewellery and plated articles. The first commercial use about 1927 was as a non-tarnish coating on silverware. Low-melting paint alloys also have been manufactured recently. Indium foil was used as a neutron indicator in the atomic bomb project uranium-graphite piles. Low-energy neutrons, about 1.5 electron-volt, are particularly effective in inducing artificial radioactivity in indium.

At the close of 1948 the quoted price of indium was \$2.25 per ounce troy. The price has remained at this level for the past three years.

IRON ORE

Although production of iron ore in Canada was lower than in 1947, developments in the past year provided assurance of an increased production in the near future. All of the output in 1948 continued to come from the Steep Rock and Helen Mines in Ontario, which were preparing for a considerable increase in production. Most of the ore produced by the two mines is for export to the United States as it is found to be economical to use ores brought from the United States, mixed with a small proportion of the Canadian ores, in the blast furnaces of Ontario. The Labrador-New Quebec project advanced to the stage where construction of a railway and port facilities is warranted. Further progress was made in the treatment of iron sulphide concentrate at the Noranda copper-gold mine in Quebec, which gives high-grade iron oxide sinter as a by-product.

ALGOMA ORE PROPERTIES LIMITED — This company is a wholly-owned subsidiary of Algoma Steel Corporation Limited. It holds a number of mineral properties in the Michipicoten area northeast of Lake Superior, including the Helen Mine, and the Goulais magnetite deposits north of Sault Ste. Marie.

During 1948 the siderite ore for the company's sinter plant at the Helen mine was derived mainly from the Victoria open pit and partly from development of the underground mine beneath the Helen open pit which adjoins the Victoria pit on the west. The larger part of the siderite from the Victoria pit was treated in the sink-float plant to remove quartz, siliceous ore, and dyke rock. A part of the open pit ore and all the ore from the present underground development is sent direct to the sinter plant. The Victoria pit, and an extension of the ore eastward that was found and opened during 1948, will continue to furnish ore until the underground mine is capable of supplying the full requirement of the sinter plant, now being enlarged to an annual capacity of 1,000,000 long tons of sinter.

The underground mine is being developed through a shaft 921 feet deep which will be used ultimately only for servicing the mine. Two levels are being developed, at 300 feet and 600 feet below the floor of the open pit above. These will serve to extract a block of ore 200 to 300 feet wide and 600 feet deep, comprising about 10

million tons. Each level of this block is expected to feed the enlarged sinter plant for five years. The ore is to be stoped by block caving, fed by gravity to a primary crusher, and elevated to surface on a series of belt conveyors. The larger part of the mine development was done by the end of 1948, and it is expected the mine will be in full operation late in 1949.

No work was done on the Britannia (formerly Bartlett) siderite deposit, nor on the Goulais magnetite property. Drilling on the eastern part of the Helen iron range gave encouraging results. The Josephine mine remained flooded. Jones and Laughlin completed drilling of the Ruth siderite deposit, near the Josephine, with results that are reported to be favourable.

STEEP ROCK IRON MINES LIMITED — The entire output of hematite continued to come from the "B" pit. This output, however, was well below the million tons anticipated early in 1948. During the summer some of the working faces ran into high sulphur ore, and the orebody in general had not been stripped sufficiently to permit the shovels to move to areas of better grade ore. It is expected that stripping will be advanced sufficiently to permit an output of a million tons or more from "B" pit during the 1949 season.

There were only two shipping grades for 1948, Seine River for blast-furnace feed, and Steep Rock open-hearth lump. The steep rock grade was divided into lump ore, minus 10 plus 4 inches, and charge ore, minus 4 plus 1½ inches.

Drilling during 1948 extended the known length of "B" orebody to 3,750 feet, with both ends open. Of this, only the central 3,200 feet can be mined conveniently by open pit. The pit at present is 1,550 feet in length, and the deepest part is at 200 feet, which is half its projected depth of 400 feet. It is estimated that the ore recoverable from "B" open pit will last 10 or 12 years at the rate of a million tons a year. A preliminary investigation of the conditions for underground mining was commenced.

Late in 1948 negotiations were completed to finance the opening up "A" orebody, 1½ miles north of "B". Silt from the lake bottom will be removed by a large suction dredge and it is expected that production from "A" pit will be commenced in 1951. As "A" orebody is considerably wider than "B", it is estimated that it will maintain an output of 2 million tons a year for 12 to 15 years from an open pit.

Initial drilling between "B" and "A" orebodies indicates a substantial tonnage of ore.

Only a small part of the Steep Rock ore is used by Canadian furnaces, and the rest is exported to the United States. The Cleveland-Cliffs Iron Company is sales agent.

LABRADOR AND NEW QUEBEC — The hematite deposits in the interior of the Labrador peninsula form part of an iron range 350 miles or more in length and 10 to 60 miles in width. All the orebodies discovered so far are on two concessions held by subsidiaries of Hollinger Consolidated Gold Mines Limited. The M.A. Hanna Company of Cleveland, Ohio, prominent iron ore operator of the Lake Superior region, has a minority interest in both subsidiaries. The concession of Labrador Mining & Exploration Company, Limited covers 20,000 square miles in Labrador, and that of Hollinger North Shore Exploration Company Limited in Quebec contains 3,900 square miles. In both cases, a smaller area must be selected for retention within a few years.

All the orebodies so far drilled were discovered by the company's geologists and prospectors as surface outcrops, with the exception of one deposit found by accident

while testing a drill. No attempt has been made as yet to investigate the intervening ground where it is covered by a thin layer of drift rock. By the end of 1948, twenty-eight separate orebodies were drilled and proved. All are of high grade and economic size, the largest containing 45 million tons. These orebodies stretch for 90 miles on the two concessions, but most of them lie in a fairly small area in the central part. The company's first objective of 300 million tons of proved ore was reached at the end of 1948.

The substantial tonnage of manganiferous ore now proved is particularly interesting. Outcrops of material high enough in manganese to be classed as manganese ore have been found in a number of places, but no body of manganese ore has been proved as yet.

The location for a railway line 350 miles in length has been surveyed from the port of Seven Islands on the St. Lawrence to the main ore zone, with a maximum grade of 0.2 per cent southbound. The port has been surveyed and a suitable site for ore docks and stock piles selected. Navigation is assured for nine or ten months in the year, and probably the year round with the aid of an ice-breaker. A convenient site for hydroelectric power has been found 25 miles from one of the large orebodies.

The ore is strikingly similar to the high-grade ore of the Mesabi range. The conditions of mining will also be similar, except that in Labrador there is little overburden and much of the ore is in ridges above valley level. To test its physical nature underground, two adits have been driven which penetrate 100 feet beneath the surface, and some shallow shafts have been sunk. The ore has the same physical characteristics underground as at surface. Because of late and early frosts, the operating season is expected to be limited to six months.

To the present the camp has been served entirely by air. In 1947 the Knob Lake airport was established, ten miles by road from base camp at Burnt Creek. By the end of 1948 the company had constructed 90 miles of roads.

The company has announced that 10 million tons annual production is required for operation on a profitable basis. The total investment required is estimated at 200 million dollars. A comparatively small market is expected on the Atlantic coast, including Sydney, Nova Scotia, and it is possible that the financial difficulties of selling ore in Great Britain and Belgium will be overcome. The bulk of the ore, however, will have to be sold in the markets now served by Lake Superior ores.

TABLE 173 Principal Statistics for the Iron Ore Mining Industry, 1946-1948

	1946	1947	1948
Active firms..... No.	11	6	16
Employees:			
On salary..... No.	72	67	86
Wage-earners..... No.	751	678	924
Total..... No.	823	745	1,016
Salaries and wages:			
Salaries..... \$	224,505	246,391	270,885
Wages..... \$	1,719,931	1,790,563	2,953,465
Total..... \$	1,944,436	2,036,954	3,224,350
Gross value of production..... \$	6,822,947	9,313,201	7,487,611
Fuel and electricity used..... \$	687,011	679,082	825,662
Process supplies used..... \$	604,081	384,124	1,197,471
Freight and treatment charges..... \$	2,065,095	2,854,530	1,888,561
Net Value..... \$	3,466,766	5,395,465	3,575,917

TABLE 174. Production of Iron Ore¹, 1939-1948

Year	Short tons	Value	Year	Short tons	Value
		\$			\$
1939.....	123,598	341,594	1944.....	553,252	1,909,608
1940.....	414,603	1,211,305	1945.....	1,135,444	3,635,095
1941.....	516,037	1,426,057	1946.....	1,549,523	6,822,947
1942.....	545,306	1,517,077	1947.....	1,919,366	9,313,201
1943.....	641,294	2,032,240	1948.....	1,237,244	7,487,611

1. Exclusive of titanium-bearing ores. All iron ore was from mines in Ontario, except 187 tons from Quebec in 1942 and 143,062 tons from New Brunswick in 1943.

TABLE 175. Imports and Exports of Iron Ore, 1939-1948

Year	Imports		Total ¹	Exports
	From United States	From Newfoundland		
	(Tons of 2,000 pounds)			
1939.....	1,205,261	1,606,775	1,764,844	10,540
1940.....	524,849	716,317	2,418,237	251,626
1941.....	2,212,437	962,259	3,254,655	282,068
1942.....	2,033,961	610,871	2,701,968	295,960
1943.....	2,978,388	911,450	3,906,425	374,677
1944.....	2,501,737	624,890	3,126,649	308,424
1945.....	2,988,484	736,665	3,739,867	771,495
1946.....	1,686,236	518,566	2,281,677	1,145,256
1947.....	3,126,307	755,612	3,944,550	1,749,976
1948.....	3,392,063	820,692	4,300,163	1,070,277

1. Includes some ore from other countries, principally Brazil.

TABLE 176. Iron Ore Charged to Iron Blast Furnaces, 1939-1948

Year	Canadian	Imported	Total
	(Tons of 2,000 pounds)		
1939.....	50,570	1,425,536	1,476,106
1940.....	154,643	2,186,074	2,342,717
1941.....	166,263	2,542,826	2,709,089
1942.....	229,253	3,383,439	3,612,692
1943.....	302,780	2,955,671	3,258,451
1944.....	266,150	3,227,039	3,493,189
1945.....	235,757	2,797,697	3,033,454
1946.....	358,173	2,167,900	2,526,073
1947.....	252,085	3,420,890	3,672,975
1948.....	193,935	3,716,683	3,910,618

THE PRIMARY IRON AND STEEL INDUSTRY

Statistics for the Primary Iron and Steel Industry include data for all establishments in Canada which were engaged chiefly in the manufacture of (a) pig iron, (b) ferro-alloys, (c) steel ingots and steel castings, (d) hot rolled iron and steel products, (e) cold rolled or cold drawn steel bars, strips and shapes. Forty-two firms were included in this industry in 1948 and reports were received for 55 different plants or departments, including 4 blast furnace departments, 4 ferro-alloy plants, 33 steel furnace divisions, and 14 rolling or drawing mills. Separate reports were received for blast furnace departments, for steel furnace divisions and rolling mills even when all three were units of a single works.

Factory sales of pig iron, ferro-alloys, steel ingots and castings and finished rolled products were 30.5 per cent higher in 1948 than in 1947, the values being \$282,167,150 and \$216,275,618 respectively. Twenty-six works in Ontario accounted for 76 per cent of the total for Canada, or \$214,419,339; 5 plants in Nova Scotia accounted for 9.6 per cent or \$27,036,837; 12 plants in Quebec for 12.1 per cent or \$34,176,303; while the remaining \$6,534,671 or 2.3 per cent was accounted for by 4 plants in Manitoba, 6 in British Columbia and 2 in Alberta.

In 1948 an average of 29,367 people were employed in this industry, this being an increase of 9 per cent over the 1947 average of 26,933. Sixty-six per cent of the employees, or 19,395 worked in plants in Ontario, 4,212 in Quebec, 4,646 in Nova Scotia, 833 in Manitoba and 281 in Alberta and British Columbia. Payments in salaries and wages during 1948 amounted to \$77,357,760, an increase of 28.3 per cent over the previous year's total of \$60,285,368. Salaries advanced to \$9,946,211 from \$8,689,952 and wages increased \$67,411,549 from \$51,595,416.

Materials used in manufacturing processes cost \$132,779,063 in 1948 compared with \$104,532,334 in 1947, and the cost of fuel and electricity was \$24,111,139 as against \$18,863,396, an increased expenditure of 27.1 per cent for materials, fuel and power.

TABLE 177. Principal Statistics of the Primary Iron and Steel Industry, by Provinces, 1947 and 1948

Province	Number of plants	Average number of employees	Salaries and wages	Cost of fuel and electricity at works	Cost of materials at works	Gross selling value of products at works
			\$	\$	\$	\$
1947						
Nova Scotia.....	5	4,340	7,118,964	1,958,578	11,948,534	21,175,210
Quebec.....	13	3,804	8,105,153	2,081,108	7,877,675	24,743,926
Ontario.....	26	17,658	42,691,676	14,292,345	83,204,961	164,756,235
Manitoba.....	4	754	1,596,059	422,714	1,209,410	4,191,019
Alberta.....	2	377	773,516	108,651	291,754	1,409,226
British Columbia.....	8					
Canada.....	58	26,933	60,285,368	18,863,396	104,532,334	216,275,618
1948						
Nova Scotia.....	5	4,646	10,992,193	2,539,615	15,079,626	27,036,837
Quebec.....	12	4,212	10,223,119	2,499,674	12,481,894	34,176,303
Ontario.....	26	19,395	53,691,148	18,462,628	103,334,500	214,419,339
Manitoba.....	4	833	1,811,200	541,323	1,589,175	5,311,124
Alberta.....	2	281	640,100	67,899	293,868	1,223,547
British Columbia.....	6					
Canada.....	55	29,367	77,357,760	24,111,139	132,779,063	282,167,150

TABLE 178. Production of Pig Iron and Sales by Producers, 1947 and 1948

Grade	Delivered in molten condition	Machine cast	Total tonnage made	Sales	
				Quantity	Income from sales
	Net tons	Net tons	Net tons	Net tons	\$
1947					
Basic.....	1,459,811	127,443	1,587,254	88,565	2,676,561
Foundry.....	-	234,612	234,612	229,018	6,736,077
Malleable.....	-	140,982	140,982	140,717	4,759,855
Total.....	1,459,811	503,037	1,962,848¹	458,300	14,172,497
1948					
Basic.....	1,613,321	128,292	1,741,613	76,341	2,789,417
Foundry.....	-	216,246	216,246	206,138	7,441,491
Malleable.....	-	167,880	167,880	169,862	6,934,148
Total.....	1,613,321	512,418	2,125,739	454,341	17,165,056

Note. Silvery pig iron has been included with ferro-alloys.

1. Includes 1,272 tons produced in British Columbia by an electric furnace process.

TABLE 179. Materials Charged to Iron Blast Furnaces, 1947 and 1948

Material	1947		1948	
	Quantity	Cost at furnace	Quantity	Cost at furnace
	Net tons	\$	Net tons	\$
Iron ore:				
Canadian (crude)	19,177	97,149	45,026	265,274
Imported (crude)	2,780,818	11,818,785	2,901,528	14,077,085
Canadian (beneficiated)	232,908	1,132,678	148,909	846,053
Imported (beneficiated)	640,072	2,736,397	815,155	3,913,320
Mill cinder, roll scale, flue dust, etc.	154,595	465,275	273,846	794,225
Scrap (net charge)	39,474	338,631	44,374	748,373
Limestone:				
From Canadian quarries	190,042	279,917	181,814	313,128
From foreign sources	590,558	775,582	705,483	977,698
Dolomite:				
From Canadian quarries	94,666	128,300	102,097	198,266
From foreign sources	4,841	6,872	13,346	20,834
Coke	1,903,419	21,106,752	2,075,263	25,247,496
Other materials	-	296,261	-	179,412
Total	-	39,182,599	-	47,581,269

TABLE 180. Consumption of Pig Iron, by Industries and by Provinces, 1945-1948 (As Reported by Consumers)

	1945	1946	1947	1948
	(Net tons)			
(a) By INDUSTRIES				
Steel ingots and castings	1,416,844	1,085,005	1,542,040	1,696,128
Iron castings	173,185	173,557	208,927	248,228
Boilers, tanks and platework	36,476	36,002	39,363	44,046
Agricultural implements	26,521	27,288	29,931	27,975
Machinery	22,149	25,784	26,680	24,699
Automobiles	5,197	7,372	8,921	7,581
Automobile parts	10,641	9,740	14,132	8,956
Railway rolling stock	28,234	21,526	24,734	32,094
Brass and copper products	2,170	3,851	3,097	3,433
Shipbuilding	3,488	939	974	870
Hardware and tools	3,223	3,480	3,024	2,600
Miscellaneous iron and steel	775	1,167	1,449	497
Heating and cooking apparatus	26,321	22,393	25,815	26,563
Electrical apparatus and supplies	4,426	2,782	3,764	5,148
Total	1,759,650	1,420,886	1,932,851	2,128,818
(b) By PROVINCES				
Prince Edward Island	97	45	40	20
Nova Scotia	393,291	295,705	366,367	430,258
New Brunswick	4,413	3,786	4,772	4,465
Quebec	101,107	74,961	92,327	105,588
Ontario	1,245,198	1,031,843	1,451,851	1,572,375
Manitoba	7,679	11,347	13,495	11,991
Saskatchewan	58	70	70	33
Alberta	164	221	422	248
British Columbia	7,643	2,908	3,507	3,840
Canada	1,759,650	1,420,886	1,932,851	2,128,818

TABLE 181. Imports and Exports of Pig Iron, 1939-1948

Year	Imports		Exports	
	Net tons	\$	Net tons	\$
1939.....	657	15,176	12,015	221,787
1940.....	29,703	672,489	4,113	101,126
1941.....	4,729	131,112	380	10,090
1942.....	1,536	42,718	427	12,175
1943.....	7,118	173,598	438	11,163
1944.....	8,516	235,666	5,698	123,681
1945.....	7,589	231,062	21,854	493,159
1946.....	12,125	344,529	939	23,673
1947.....	8,893	252,054	1,475	55,610
1948.....	7,378	233,223	662	29,226

TABLE 182. Production of Steel Ingots and Steel Castings and Sales by the Producers, 1947 and 1948

	1947			1948		
	Total tonnage of steel made (all kinds) including alloys	Sales		Total tonnage of steel made (all kinds) including alloys	Sales	
		Quantity	Income from sales		Quantity	Income from sales
	Net tons	Net tons	\$	Net tons	Net tons	\$
Steel Ingots:						
Basic open hearth.....	2,438,569	63,746	2,296,576	2,620,946	68,354	3,336,482
Electric.....	416,210	2,850	629,200	466,117	-	-
Total Steel Ingots.....	2,854,779	66,596	2,925,776	3,087,063	68,354	3,336,482
Steel Castings:						
Basic open hearth.....	24,100	22,093	5,025,675	34,041	32,026	8,125,577
Converter.....	741	741	249,985	395	386	125,973
Electric.....	66,332	62,683	17,058,857	78,981	75,548	22,680,281
Total Steel Castings.....	91,173	85,517	22,334,517	113,417	107,960	30,931,831
Total Steel Ingots and Castings.....	2,945,952	152,113	25,260,293	3,200,480	176,314	34,268,313
Any other products.....	-	-	712,484	-	-	885,454
Total All Products.....	-	-	25,972,747	-	-	35,153,767
Alloy steel included in above:						
Ingots.....	134,339	348	90,000	155,863	-	-
Castings.....	13,558	13,158	4,668,327	15,737	15,333	6,006,168
Total.....	147,897	13,506	4,758,327	171,600	15,333	6,006,168

TABLE 183. Materials Used in Steel Furnaces, 1947 and 1948

Material	1947		1948	
	Quantity	Cost of purchased materials	Quantity	Cost of purchased materials
	Net tons	\$	Net tons	\$
Pig iron:				
Own make	1,513,502	-	1,672,556	-
Purchased	28,538	830,336	23,572	807,518
Scrap iron or steel:				
Own make	882,958	-	934,905	-
Purchased	788,718	19,426,124	898,634	23,130,302
Spiegeleisen	131	6,818	-	-
Silicospiegeleisen	438	36,434	602	54,786
Ferrocolumbium	4	11,366	-	-
Ferromanganese:				
High carbon	11,014	1,355,643	13,566	1,881,224
Medium carbon	7,817	1,019,556	8,639	1,267,649
Low carbon	283	61,831	489	127,553
Silicomanganese	7,399	981,499	6,885	1,073,706
Sil-x	1,041	113,262	313	41,882
Ferrosilicon:				
15%	430	19,678	132	8,362
25%	107	7,174	-	-
50%	5,929	418,583	5,959	551,524
75%	109	9,915	881	96,553
85-90%	210	36,204	118	25,328
Ferrochrome (including chrom-x):				
High carbon	1,259	240,962	1,506	354,838
Low carbon	1,026	353,570	915	354,854
Ferromolybdenum	101	110,037	65	80,263
Ferrophosphorus	486	37,566	531	43,544
Ferroselenium	-	88	4	6,463
Ferrotitanium	500	86,228	442	81,129
Ferrotungsten	366	888,904	187	590,584
Ferrovandium	72	219,031	67	218,734
Ferrozirconium	3	729	30	4,754
Calcium silicon	264	82,515	37	14,664
Calcium manganese silicon	297	79,289	524	200,328
Other ferro-alloys	-	30,715	-	3,848
Aluminum ingot and shot	786	213,653	876	300,123
Copper ingots, cakes, shot, etc	334	132,616	261	113,306
Nickel	752	483,917	869	603,059
Other metals	-	45,508	-	52,752
Ore, iron	155,621	1,333,298	170,790	1,637,660
Ore, manganese	13	647	57	2,480
Ore, chrome	429	21,129	229	19,067
Ore, tungsten	39	55,717	172	206,112
Bentonite	3,095	77,412	4,490	121,474
Coal:				
Anthracite	586	7,223	505	6,994
Bituminous	239	2,976	312	4,122
Coke	6,008	78,290	8,559	118,904
Charcoal	64	3,040	49	3,336
Dolomite:				
Crude	88,935	221,953	109,220	316,353
Calcined	6,748	124,107	9,587	198,040
Fluorspar	18,768	612,929	20,651	700,005
Ganister	7,117	24,610	8,617	30,802
Graphite	775	74,123	641	63,095
Lime	53,374	414,464	74,074	666,662
Limestone:				
Canadian	96,357	165,249	101,924	201,551
Imported	135,633	171,732	142,172	199,047
Magnesite	15,293	607,889	15,286	686,486
Electrodes	-	1,024,862	-	1,480,847
Silica sand:				
For moulds	50,988	346,677	83,785	613,659
For sand blasting	353	13,315	1,101	89,431
Other foundry sands	-	67,569	11,155	39,648
Sulphur	86	5,112	74	10,143
Firebrick, fireclay and other refractories	-	1,947,651	-	2,958,073
Calcium molybdate	36	36,458	41	39,927
Molybdenum trioxide (molybdic oxide) briquettes	97	85,372	174	144,511
All other materials	-	1,855,369	-	2,470,984
Total Value of Metals, Ores and Other Materials Used	-	36,718,924	-	45,119,043

TABLE 184. Production of Ferro-Alloys, 1939-1948

Year	Net tons	Year	Net tons
1939	85,540	1944.....	171,323
1940	149,394	1945.....	171,642
1941	204,354	1946.....	139,392
1942	209,017	1947.....	227,123
1943	197,094	1948.....	232,734

MAGNESIUM

Magnesium metal was produced in 1948 by the Aluminum Company of Canada at Arvida, Quebec. The raw material was brucite obtained from the firm's plant at Wakefield, Quebec. The Dominion Magnesium Limited, at Haley, Ontario, continued to ship magnesium metal and alloys from the stockpile created during the war years. Indications are that this stockpile will have diminished to the point where production may be resumed early in 1950.

The market price of 20.5 cents per pound remained constant through the year.

TABLE 185. Production of Primary Magnesium Metal, 1941-1948

Year	Quebec		Ontario		British Columbia		Canada	
	Pounds	\$	Pounds	\$	Pounds	\$	Pounds	\$
1941.....	-	-	-	-	10,905	2,944	10,905	2,944
1942.....	141,081	62,076	473,910	208,520	193,727	85,240	808,718	355,836
1943.....	-	-	7,153,974	2,074,652	-	-	7,153,974	2,074,652
1944.....	-	-	10,579,778	2,575,695	-	-	10,579,778	2,575,695
1945.....	-	-	7,358,545	1,607,264	-	-	7,358,545	1,607,264
1946.....	-	-	320,677	75,538	-	-	320,677	75,538
1947.....	Not available for publication							
1948.....								

1. Magnesium powder.

TABLE 186. Consumption of Magnesium Metal, 1945-1948

	1945	1946	1947	1948
	(Pounds)			
In non-ferrous smelters	487,773	441,000	340,460	425,088
In white metal alloy foundries.....	37,740	142,445	174,510	382,684
In brass and bronze foundries	66,116	17,266	13,287	31,782
In aluminum products	45,452	15,061	32,280	58,947
Total accounted for	637,081	615,772	560,537	898,501

MANGANESE

Manganese ore production in Canada in 1948 was limited to a small test shipment by Quebec Manganese Mines Limited from a deposit on the Magdalen Islands. Operations at this property ceased after much exploratory work indicated that it could not be mined on a profitable basis.

No production was obtained from the bog ore deposit in New Brunswick which commenced development in 1947.

TABLE 187. Production of Manganese Ore, 1939-1948

Year	Tons	Value	Year	Tons	Value
		\$			\$
1939.....	396	3,688	1944.....	-	-
1940.....	152	4,315	1945.....	-	-
1941.....	1	1	1946.....	-	-
1942.....	435	8,932	1947.....	225	7,875
1943.....	48	985	1948.....	3	88

1. 7,500 pounds manganese metal produced at the mine from Nova Scotia manganese ore.

TABLE 188. Imports of Manganese Ore, 1939-1948

Year	Tons	Value	Year	Tons	Value
		\$			\$
1939.....	29,787	621,931	1944.....	85,795	2,370,109
1940.....	70,460	777,416	1945.....	198,277	4,571,592
1941.....	104,473	1,170,708	1946.....	144,023	2,484,707
1942.....	57,389	800,248	1947.....	223,503	6,145,568
1943.....	51,234	1,445,252	1948.....	230,298	6,449,819

TABLE 189. Imports of Manganese Ore, by Principal Countries of Supply, 1946-1948

	1946	1947	1948
	(tons)		
From:			
Gold Coast.....	130,907	109,903	60,516
British India.....	-	12,711	-
South Africa.....	345	-	-
United States.....	12,768	100,889	169,746
United Kingdom.....	3	-	36
Total imports.....	144,023	223,503	230,298

MERCURY

There has been no production of mercury in Canada since September, 1944, and all shipments since then have been from producers' stocks. All of the Canadian production in the past came from the Pinchi mine of The Consolidated Mining and Smelting Company of Canada, Limited, and from the Takla mine of Bralorne Mines Limited, both mines being in the Omineca Mining Division, British Columbia. The mines have remained idle because world prices have been too low to permit profitable operation.

During 1948 the price of mercury fluctuated from \$74 to \$90 per 76 pound flask. The European sources of mercury spasmodically released excess quantities which depressed the market. Following this were uncertain periods of withholding which tended to make a rather unstable market.

TABLE 190. Production of Mercury, 1939-1948

Year	Pounds	\$	Year	Pounds	\$
1939.....	436	1,226	1944.....	735,908	1,210,375
1940.....	153,830	369,317	1945.....	-	-
1941.....	536,304	1,335,697	1946.....	-	-
1942.....	1,035,914	2,943,807	1947.....	-	-
1943.....	1,690,240	4,559,200	1948.....	-	-

TABLE 191. Production of Mercury, Consumption, Imports and Exports, 1939-1948

Year	Production in Canada	Consumption in Canada	Imports	Exports
		(pounds)		
1939.....	436	89,617	109,232	—
1940.....	153,830	75,643	78,597	108,000
1941.....	536,304	151,351	8,599	360,164
1942.....	1,035,196	185,118	1,971	692,753
1943.....	1,690,240	201,982	2,047	1,304,692
1944.....	735,908	130,515	35,428	362,670
1945.....	—	100,700	27,101	261,720
1946.....	—	102,320	152,719	57,005
1947.....	—	344,516	412,649	17,084
1948.....	—	552,216	803,878	175

TABLE 192. Consumption of Mercury, by Principal Uses, 1944-1948

Industry	1944	1945	1946	1947	1948
	(pounds)				
Pharmaceuticals and fine chemicals.....	24,307	26,652	26,183	60,578	41,565
Heavy chemicals.....	78,300	53,701	45,005	260,000	479,000
Electrical apparatus.....	4,652	2,353	12,192	5,438	13,151
Gold mines.....	10,000 ¹	10,000 ¹	6,500	6,000	6,000
Miscellaneous.....	13,256	11,847	12,490	12,500	12,500
Total.....	130,515	100,760	102,320	344,516	552,216

1. Estimated.

MOLYBDENUM

The Molybdenite Corporation of Canada, Limited suspended mining operations at the La Corne mine late in 1947. Shipments of molybdenite were made from the stockpile at La Corne, Quebec during 1948. There was no mining of molybdenum ore in Canada during the period under review.

Molybdenum has a widening range of uses, but by far the greater part of the output is used in steel to intensify the effect of other alloying metals, particularly nickel, chromium, and vanadium. These steels usually contain from 0.15 to 0.4 per cent molybdenum, but in some instances the percentage is considerably higher. For high-speed tool-steels as much as 9 per cent is added.

Molybdenum alloys are used widely for the hard-wearing and other important parts of airplanes. They are used in the automobile industry; in high-grade structural die and stainless steels; in heat and corrosion resistant alloys; and to some extent in high-speed tool steels. Molybdenum is used in cast iron and in permanent magnets. Much molybdenum wire and sheet is used in the incandescent lamp and in the radio industries; and new alloys suitable for electrical resistance and contacts and for heating elements contain molybdenum. An appreciable amount of molybdenum is used in the glass industry in which heavy sheets of the metal act as electrodes to conduct the current through the molten glass in the electric furnaces.

TABLE 193. Production of Molybdenite, 1939-1948

Year	Ores milled	Ores and concentrates shipped or used		Total MoS ₂ content of shipments
	Tons	Tons	Value ¹ \$	Pounds
1939.....	1,492	1.3	816	²
1940.....	3,936	11.1	10,280	²
1941.....	28,100	98.3	89,470	173,991
1942.....	39,708	113.7	134,963	158,780
1943.....	120,376	392.4	549,515	653,200
1944.....	187,130	1064.0	1,079,698	1,870,132
1945.....	80,575	489.1	411,663	839,419
1946.....	84,280	368.2	295,640	676,844
1947.....	83,665	396.0	309,048	759,795
1948.....	—	173.5	137,143	304,762

1. Value as given by the operators in 1939; for 1940-1948 value was estimated using market or Government prices.

2. Not known.

PITCHBLENDE

Pitchblende, the ore of radium and uranium, is mined in Canada only in the Great Bear district of the Northwest Territories. Prospecting reports indicate that radioactive minerals have been found at Contact Lake, Northwest Territories; Lake Athabasca, Saskatchewan; and Theano Point, Ontario.

Statistics on pitchblende ores and products have not been available since 1940.

TABLE 194. Canadian Refinery Production of Pitchblende Products, 1933-1948

Year	\$	Year	\$
1933 ¹	247,900	1938.....	1,045,458
1934.....	159,400	1939.....	1,121,553
1935.....	413,700	1940.....	410,176
1936.....	605,500	1941-1948.....	2
1937.....	876,540		

1. First production.

2. Not available for publication.

SELENIUM

The occurrence of selenium is fairly widespread throughout the world, but it is of commercial importance only in its association with copper sulphide ores from which it is recovered as a by-product in the refining of copper. A variety of uses have been developed for the metal, but relatively small quantities are involved. In Canada refined selenium and certain selenium salts are produced and most of the output is exported.

Canadian production of selenium is obtained from the refineries of The International Nickel Company of Canada, Ltd., at Copper Cliff, Ontario, and Canadian Copper Refiners, Ltd., at Montreal East, Quebec. At Copper Cliff, the metal is derived from International Nickel's copper-nickel ores. The plant has a demonstrated capacity of 270,000 pounds of selenium a year and is probably capable of a larger production. At Montreal East, selenium is recovered from the treatment of copper anodes made from the copper-gold ores of Noranda, Quebec, and from blister copper from the copper-zinc ores of Hudson Bay Mining and Smelting Co. Ltd., on the Manitoba-Saskatchewan boundary. The Montreal East plant has an annual rated capacity of 450,000 pounds of selenium, which is larger than any other selenium plant in the world. This plant also produces selenium dioxide, sodium selenate, and sodium selenite.

Selenium is generally marketed as amorphous powder, but cakes and sticks are also obtainable. Other selenium products marketed are ferro-selenium, sodium selenate, sodium selenite, selenious acid, and selenium dioxide. No figures are available to show the relative consumption of selenium by uses. The most important uses are in the glass, rubber, and paint industries, but many new uses have been developed as a result of research during the war. Among the most interesting of the latter is the use of selenium in electrical dry plate rectifiers for radar equipment and aircraft generators. Its use in rectifiers for numerous electronic devices, battery charging, electroplating, and welding has been increasing.

In the manufacture of glass, selenium is used to neutralize the green colour caused by iron impurities. When sufficient selenium is added the glass turns a ruby colour highly suitable for signal lenses. In the manufacture of rubber the addition of

selenium in concentrations of from 0.1 to 2.0 per cent promotes resistance to heat, oxidation, and abrasion. It is also used as an accelerator in the vulcanization of synthetic rubber.

The New York price for selenium remained at \$2.00 per pound throughout 1948.

TABLE 195. Production of Selenium in Canada, 1939-1948

Year	Pounds	\$	Year	Pounds	\$
1939.....	150,771	266,714	1944.....	298,592	537,466
1940.....	179,860	343,533	1945.....	379,187	728,039
1941.....	406,930	777,236	1946.....	521,867	949,798
1942.....	495,369	951,108	1947.....	501,090	937,038
1943.....	374,013	654,523	1948.....	390,894	781,788

TANTALUM-COLUMBIUM

Canada produces no tantalite or columbite and the known Canadian occurrences of these minerals are scarce and of undetermined economic interest. The minerals tantalite and columbite are the tantalate and columbate, respectively, of iron and manganese, with the general formula $(\text{Fe.Mn})\text{TaCB}_2\text{O}_6$. They grade one into the other according as whether tantalum or columbium predominates. Both tantalite and columbite were of increasing importance in the war effort and tantalite was placed in the group of "strategic" minerals having the highest priority rating. The occurrence of all tantalum-columbian minerals is restricted to granite-pegmatites, or to residual or alluvial deposits derived from such rock. The chief world sources of tantalite proper have been Western Australia, Belgian Congo, Southern Rhodesia, Uganda, United States and Brazil. The supply of columbite has come mainly from Nigeria, Belgian Congo, Southwest Africa, Argentina and Brazil. The annual world output of tantalite-columbite is small and complete data on same are not available at present.

Experimental tests on the milling of tantalum-columbite ore from the Pey Tantalum mine, Ross Lake, Northwest Territories, were made by Tantalum Refining and Mining Corporation during 1947.

United States quotations for tantalum ore, December, 1948 were, per pound Ta_2O_5 , \$2 to \$2.75 for 60 per cent concentrate, the price depending on the source. Columbium metal, per kilo, base prices: rod \$280; sheet \$250. Tantalum metal, per kilo, base prices, \$160.60 for C.P. rod; sheet \$143; discounts on volume business.

TELLURIUM

Tellurium, like its associated element selenium, is commonly found in small amounts in copper-sulphide and gold ores. The potential production as a by-product in the refining of copper is great but its recovery is restricted to meet the relatively minor quantities required by the industry.

Tellurium is recovered commercially in Canada at the Copper Cliff, Ontario, plant of The International Nickel Company of Canada, Limited, and at the Montreal East Refinery of Canadian Copper Refiners, Limited. At Copper Cliff it is recovered from the slimes formed in the process of refining copper produced from the Sudbury nickel-copper ores. At Montreal East it is obtained from the refining of copper anodes

made from copper ores at Noranda, Quebec, and from blister copper originating from the copper-zinc ores of Hudson Bay Mining and Smelting Co., Limited at Flin Flon on the Manitoba-Saskatchewan boundary.

The price of tellurium was quoted at \$1.75 a pound in New York throughout 1948.

TABLE 196. Production of Tellurium, 1939-1948

Year	Pounds	\$	Year	Pounds	\$
1939.....	2,940	4,769	1944.....	10,661	18,657
1940.....	3,491	5,607	1945.....	484	929
1941.....	11,453	18,394	1946.....	15,848	24,405
1942.....	11,084	17,735	1947.....	9,194	16,090
1943.....	8,600	15,050	1948.....	11,425	19,994

TABLE 197. Consumption of Tellurium Metal in Steel and White Metal Foundries, 1940-1948

Year	Steel foundries	White metal foundries
	(pounds)	
1940.....	400	629
1941.....	185	492
1942.....	50	612
1943.....	135	453
1944.....	398	531
1945.....	-	308
1946.....	-	1,372
1947.....	-	974
1948.....	-	947

THALLIUM

There has been no production of thallium in Canada since 1944. The first commercial production of this element in this country was in 1944 when 128 pounds valued at \$1,690 were contained in residues produced by Hudson Bay Mining and Smelting Company, Limited at the Flin Flon smelter, Manitoba. These residues were exported for treatment in foreign plants. Thallium metal was quoted in the United States at \$15.00 per pound nominal, December, 1948.

TIN

No economic deposits of tin have been found in Canada up to the present. Minor occurrences, principally of cassiterite (SnO_2) the most important tin mineral, are found in the New Ross area, Lunenburg County, Nova Scotia; in the Sudbury mining division of Ontario; in the Lac du Bonnet district of southeastern Manitoba; in southeastern Manitoba; in southern British Columbia; in the Mayo district, Yukon, and in the Yellowknife area, Northwest Territories. Those in Nova Scotia, Ontario, Manitoba, and the Northwest Territories are found largely in pegmatite dykes. In Yukon, crystalline cassiterite is found in placer gravels along numerous creeks and in one small lode deposit. In British Columbia, tin is found associated with base metal sulphide ores. The last mentioned type of occurrence is the only one that has been exploited, and is the source of the small Canadian production. The lead-zinc-silver orebody of the Sullivan mine, Kimberley, British Columbia, contains a very small percentage of tin. Since 1941, The Consolidated Mining and Smelting Company of Canada, Limited, has been recovering a portion of this tin as a by-product from the concentration of its lead-zinc ore.

In 1948 the average price of tin quoted in New York was 99.25 cents per pound. The quotation at the year-end was \$1.03 per pound. The Canadian price at Montreal was 83.20 cents per pound in January. It increased to \$1.05 at mid-year and remained at that level throughout December.

TABLE 198. Production of New Tin, Domestic Consumption, Imports and Exports, 1939-1948

Year	Production in Canada	Domestic consumption	Exports	Imports	Stocks at end of period
(Tons of 2,000 pounds)					
1939.....	-	2,787	-	2,913	Not available
1940.....	-	3,868	-	5,918	2,655
1941.....	32	6,436	-	8,719	4,621
1942.....	619	3,571	-	3,601	5,120
1943.....	390	2,365	-	1,311	3,920
1944.....	258	3,383	-	1,341	2,622
1945.....	425	4,108	-	3,597	2,565
1946.....	437	4,152	-	3,514	2,430
1947.....	357	4,063	-	2,601	3,152
1948.....	344	4,531	-	4,029	2,944

TABLE 199. Production of New Tin, 1941-1948

Year	Pounds	\$	Year	Pounds	\$
1941 ¹	64,744	33,667	1945.....	849,983	492,990
1942.....	1,237,863	643,689	1946.....	874,186	507,028
1943.....	776,937	450,622	1947.....	714,198	517,794
1944.....	516,626	299,643	1948.....	691,332	688,567

1. First commercial production.

TABLE 200. Consumption of Tin (Ingots or Bars), by Principal Industries, 1944-1948

	1944	1945	1946	1947	1948
(Tons of 2,000 pounds)					
In white metal foundries (solder, babbitt, etc.).....	1,200	1,320	1,321	1,300	1,636
In steel plants (chiefly for tinplate).....	1,517	2,010	2,518	2,347	2,443
In brass and bronze foundries.....	406	532	208	307	315
In other industries.....	260	246	105	109	137
Total accounted for.....	3,383	4,108	4,152	4,663	4,531

TITANIUM

The Dominion Magnesium Limited, Haley, Ontario, has developed a process for the production of metallic titanium. The properties of this metal are such that wide applications for its use should be found if the cost of production is sufficiently reduced. The metal melts at 1800°C, can be rolled and drawn, has a specific gravity of 4.5 (iron is 7.8) and scratches quartz. It has excellent corrosion resistance, except for certain acids, and shows no tarnish after thirty days' exposure to salt spray. The tensile strength of the annealed metal is 82,000 pounds per square inch. Cold-worked to 50 per cent reduction, the tensile strength is 126,000 pounds per square inch.

In recent years the production of titanium-bearing ores has been from the Baie St. Paul area in Quebec. Development of the ilmenite deposit at Allard Lake in Quebec indicates large tonnages of titanium-iron ore. It is proposed to ship this ore by rail to Havre St. Pierre on the St. Lawrence, thence to a smelter where the iron will be separated as pig iron and the slag will be used to produce titanium compounds.

The paint industry uses, in addition to titanium white, a considerably larger amount of mixed pigments containing titanium, also imported from the United States. Titanium white has many other uses, such as: to make paper opaque; to make rubber white; in ceramic glazes; for printing inks; in linoleum; in cosmetics; and to de-lustre artificial silk.

Titanium is used in many other forms. Ferrotitanium and ferrocarbon-titanium are used under special circumstances to purify steel. It is all imported from the United States.

Prices (nominal) f.o.b. Atlantic ports at the end of 1948 were: Ilmenite, 56 to 60% TiO_2 , \$18 to \$20 per gross ton. Rutile, 94% TiO_2 , 6 to 8 cents per pound. The nominal quotation for titanium metal, 96-98 per cent, was \$5 to \$6 per pound.

TABLE 201. Production of Titanium Ore¹, 1939-1948

Year	Short tons	\$	Year	Short tons	\$
1939.....	3,694	21,267	1944.....	33,973	165,195
1940.....	4,535	24,510	1945.....	14,147	67,575
1941.....	12,651	49,110	1946.....	1,406	7,735
1942.....	10,031	50,906	1947.....	7,104	36,036
1943.....	69,437	308,290	1948.....	4,441	21,091

1. All from Quebec.

TABLE 202. Imports of "Antimony Oxide, Titanium Oxide and White Pigments Containing Not Less Than 14 Per Cent by Weight of Titanium", 1939-1948

Year	From the United Kingdom		From the United States		Total Imports	
	Pounds	\$	Pounds	\$	Pounds	\$
1939.....	1,689,329	227,805	7,302,923	574,193	9,003,693	803,198
1940.....	477,912	65,747	8,292,103	717,210	8,700,015	782,957
1941.....	418,962	64,302	12,801,017	1,257,065	13,219,979	1,321,367
1942.....	115,360	27,697	14,527,348	1,395,345	14,642,708	1,423,042
1943.....	33,700	8,094	16,855,800	1,525,368	16,889,500	1,533,462
1944.....	-	-	20,174,795	1,871,434	20,174,795	1,871,434
1945.....	79,440	16,752	21,279,636	2,029,137	21,359,076	2,045,889
1946.....	76,800	11,678	23,854,188	2,182,007	23,930,988	2,193,685
1947.....	17,920	4,862	27,294,577	2,960,964	27,312,497	2,965,826
1948.....	121,968	25,057	39,119,325	4,572,006	39,292,704	4,610,340

TABLE 203. Consumption of Titanium Oxide, by Industries, 1947 and 1948

Industry	1947		1948	
	Pounds	Cost at works	Pounds	Cost at works
Paints:		\$		\$
Extended titanium dioxide pigments.....	14,083,236	1,167,946	17,582,375	1,609,929
Titanium dioxide.....	8,099,513	1,527,934	11,532,604	2,378,389
Polishes and dressings.....	276,469	39,424	308,655	43,153
Pulp and paper.....	654,000	120,611	644,000	130,594
Total accounted for.....	23,113,218	2,855,915	30,072,634	4,162,065

TABLE 204. Consumption of Ferrotitanium in Manufacture of Steel, 1939-1947

Year	Tons	\$	Year	Tons	\$
1939.....	118	23,498	1944.....	786	149,527
1940.....	118	24,233	1945.....	656	123,975
1941.....	181	52,128	1946.....	416	73,485
1942.....	439	66,555	1947.....	500	86,228
1943.....	614	118,416	1948.....	442	81,129

TUNGSTEN

The only producer of tungsten concentrates in Canada during 1948 was the Emerald mine of Canadian Explorations Limited, near Salmo, in Southern British Columbia.

The ore at the Emerald mine occurs in several contact metamorphic zones, mainly between granite and argillite and is finely disseminated, usually in impure limestone with garnetite. The main contact metamorphic deposit contains about 250,000 tons of 1.25 per cent WO_3 ore. Treatment in the mill is a combination of wet gravity and flotation.

As an alloying metal in steel, tungsten (usually as ferrotungsten, but sometimes as calcium tungstate or scheelite concentrate) is used essentially to impart hardness and toughness, which are maintained even when the steel is heated to a high temperature. Almost 80 per cent of the consumption of tungsten in the United States is used for the production of high-speed steels for cutting tools, in which the tungsten content is 15 to 20 per cent. Minor amounts of tungsten are used in steels for dies, valves, and valve seats for internal combustion engines, and for permanent magnets. Stellite, the best known non-ferrous alloy, contains 10 to 15 per cent tungsten with higher percentages of chromium and cobalt. Tungsten carbide is widely used as an extra hard cutting tool and is now being used as inserts into detachable bits for rock drilling. Pure tungsten is used in lamp filaments, in radio tubes, contact points, etc.

The price of tungsten concentrate is an arbitrary agreement between the Canadian producer and the buyers. The average price in 1948 was \$20 per short ton unit of WO_3 .

TABLE 205. Production (Commercial Shipments) of Crude Tungsten Concentrates, 1939-1948

Year	Crude	WO_3 content	\$
	Pounds	Pounds	
1939.....	8,825	1	4,917
1940.....	12,002	1	7,303
1941.....	82,846 ²	42,356	38,712
1942.....	520,981	321,847	406,275
1943.....	1,508,621	917,763	1,083,538
1944.....	886,745	283,253	245,780
1945.....	1,153	792	1,045
1946.....	—	—	—
1947.....	668,000	496,023	680,792
1948.....	1,409,297	1,046,160	1,046,160

1. Not recorded.

2. Includes export of considerable low-grade material to United States.

TABLE 206. Consumption of Ferrotungsten in Steel Furnaces, 1939-1948

Year	Short tons	Cost at works	Year	Short tons	Cost at works
		\$			\$
1939.....	106	173,250	1944.....	86	287,116
1940.....	376	829,859	1945.....	138	455,317
1941.....	482	1,003,314	1946.....	260	402,174
1942.....	203	524,007	1947.....	366	888,904
1943.....	550	1,721,967	1948.....	187	590,584

VANADIUM

Some of the magnetites of the Rainy River district in Ontario are known to contain relatively small quantities of vanadium and some research has been conducted as to its economic recovery. There is no production of either the metal or its ores in Canada at the present time.

The principal world occurrences of vanadium are in Arizona, Colorado and Utah in the United States; Minasragra in Peru; Broken Hill in northern Rhodesia; and Grootfontein district in South West Africa.

The metal is employed chiefly in the manufacture of alloy steels and irons. It is also used in the form of ammonia meta-vanadate as a catalyst in the manufacture of sulphuric acid and in the non-ferrous, glass, ceramic and colour industries.

The United States Bureau of Mines reports that vanadium has been and is now being obtained by some countries from other than vanadium ores, including petroleum, bauxite, phosphate rock and titaniferous magnetites.

Vanadium ore was quoted December, 1948, at 27½ cents per pound contained V₂O₅, f.o.b. shipping point, by "E & M J Metal and Mineral Markets", New York.

CHAPTER SIX

THE NON-FERROUS SMELTING AND REFINING INDUSTRY

The Non-ferrous Smelting and Refining Industry, as defined for statistical purposes, includes only those firms engaged primarily in the smelting of non-ferrous ores or concentrates and the refining of metals recovered therefrom.

The net value added by the industry in the processing of crude or semi-crude material during 1948 totalled \$146,830,891 compared with \$115,798,652 in 1947. Refined products included gold, silver, nickel, copper, lead, zinc, aluminum, tin, magnesium, calcium, barium, antimony, bismuth, cobalt, cadmium, selenium, tellurium and sulphur; other end products of individual plants or companies were copper-nickel matte, cobalt salts, cobalt oxide, nickel oxide, nickel salts, bauxite concentrates, arsenious oxide, sulphuric acid, platinum metals residues, zinc oxide, zinc dust, and blister and anode copper. Statistics relating to the production of pitchblende products at Port Hope, Ontario, are not included in this report.

It should be noted, in a study of these data, that firms operating both mines and smelters may vary from year to year the nominal value of crude ores, etc., shipped from their mines to their own smelters, with the result that in some years the mining industry proper is favoured economically at the expense of the non-ferrous smelting and refining industry and vice versa. The total annual net value of commodity production for the Dominion as a whole is, however, not affected by these arbitrary internal evaluations.

Fuels and electricity used by the industry in 1948 totalled \$36,288,387 compared with \$28,967,359 in 1947. The value of chemicals and other process supplies consumed during the year amounted to \$31,037,029 as against \$25,068,884 in the preceding year.

The average number of employees during 1948 was 19,701 compared with 17,449 in 1947 and salaries and wages amounted to \$52,276,837 compared with \$40,767,871 in the previous year.

Aluminum Company of Canada Ltd. — Production of aluminum is entirely by this company, which has its alumina plant at Arvida and reduction plants at Arvida, Ile Maligne, Shawinigan Falls, La Tuque and Beauharnois, all in the province of Quebec. These reduction plants have a total rated capacity of about 550,000 tons of aluminum a year or over 20 per cent of the estimated productive capacity of the world.

Fabricating plants are located at Kingston, Toronto and Etobicoke in Ontario and at Shawinigan Falls in Quebec. These plants consume only a small part of the company's production, and Aluminum Company of Canada is primarily a producer and exporter of aluminum ingot.

Developments in 1948 consisted mainly in adjusting production to meet the increased demand. The reduction plants at La Tuque and Beauharnois were closed and operations were concentrated at Arvida, Ile Maligne, and Shawinigan Falls.

Noranda Mines Ltd. (From the company's annual report) — During the year the smelter treated 836,450 tons of ore, concentrate and secondary products such as

refinery slag and scrap copper and brass, from which 102,707,500 pounds of anodes were produced. Included in the total tonnage treated were 327,049 tons of materials which were treated for other companies on a toll basis. After deducting the copper, gold and silver recovered from secondary products the estimated recovery of new metals was 97,756,497 pounds of fine copper, 186,602 ounces of gold and 1,254,365 ounces of silver. The estimated recovery from Horne Mine ores and concentrate was 43,731,979 pounds of copper, 142,273 ounces of gold and 437,493 ounces of silver. In addition 2,291 tons of blister copper received from a customs shipper were melted and processed into anodes.

Canadian Copper Refiners Limited — Copper production totalled 95,410 tons in 1948 compared with 88,930 tons in 1947. The extension program which will increase refinery capacity by approximately one-eighth, and provide for the production of special shapes is scheduled for completion in June, 1949.

International Nickel Company of Canada Ltd. (From President's address, April, 1949) — "Canada has in recent years greatly increased her position as an important copper consumer. As a result, our sales of copper for Canadian consumption in 1948 were some 115,000,000 pounds or 90 per cent greater than before the war. Our plant at Port Colborne for the recovery of cobalt is now producing about 15 tons of metal in oxide monthly and an increase in output of this important element is contemplated. A large portion of this metal produced at our Clydach plant is sold in the form of cobalt salts.

The platinum market, during the year was subject to many price changes and, at times, to unusually heavy demands from trade throughout the world. The range in quoted prices was from \$66 to \$101 per ounce.

Our Orford process served well for many years in the production of the world's nickel requirements. However, we have developed a better process. A plant has been built for the separation of copper, nickel and platinum metals in matte by subjecting the matte to controlled cooling, flotation and magnetic separation. The matte flotation operations in the new nickel oxide sinter plant commenced in September and are rapidly approaching full-scale production, practically replacing the Orford process. The transfer of sintering operations from Port Colborne to Copper Cliff will soon be completed.

Further progress has been recorded in the flash smelting of nickel and copper flotation concentrates with oxygen. As announced last May, results obtained in our pilot unit have justified the planned construction of an oxygen plant and of an initial flash smelting furnace on a commercial scale. The new process will permit a considerable saving in coal requirements, and at the same time will serve both to increase the production of sulphuric acid and to enable the production of liquid sulphur dioxide from furnace exhaust gases by Canadian Industries Limited".

Falconbridge Nickel Mines Ltd. (From the company's annual report) — In 1948 the treatment plants handled an average of 2,346 tons for 350 days, and were shut down for sixteen days in February. The mill treated 545,463 tons or 66.4 per cent of the plant feed. Ore and concentrates smelted totalled 406,352 tons or 49.4 per cent of the total ore received from the mine. During the year one blast furnace operated 5½ months and two furnaces for six months. The breakdown in August of a large converter blower resulted in six weeks' operation with inadequate smelter air.

Deloro Smelting and Refining Co. Ltd. — The cobalt refinery at Deloro, Ontario, treated ores from the cobalt district. The stockpile of cobalt ore at Deloro held by the United States Government was transferred to New Jersey. Arsenical compounds produced at Deloro are made from the crude arsenic obtained from the O'Brien mine in Northwestern Quebec and from the silver-cobalt-arsenic ores of the Cobalt area.

Dominion Magnesium Ltd. — This firm was the only Canadian producer of magnesium during the war. Production temporarily ceased when the stockpile of metal became large enough to meet the current demands of the market. Equipment previously used for magnesium recovery is now used to produce metallic calcium. Calcium is being used by the research project on nuclear fission. Some barium metal was made in 1948 and some metallic strontium was produced on an experimental scale. Extensive research has developed a process which this company proposes to use to produce metallic titanium on a large commercial scale.

Hudson Bay Mining & Smelting Co. Ltd. (From the company's annual report) — The tonnage of zinc concentrates treated during the year was greater than in 1947 while the average zinc assay per ton of concentrates treated was slightly lower. The percentage of recovery of zinc from concentrates treated to slab zinc produced was also somewhat lower than in 1947. The tonnage of high quality four-nines-plus grade zinc produced was the largest on record and considerably over the former peak established in the previous year.

The cadmium plant treated precipitates from the zinc purification plant and produced in 1948 a total of 148,864 pounds of metallic cadmium having an average purity of 99.98 per cent. Production was somewhat lower than in the preceding year.

The copper smelter operated satisfactorily during the year, and all available material was smelted. The tonnage of pay charge was somewhat lower than in the previous year and amounted to 421,745 tons, but the average gold, silver, and copper assays per ton of pay charge were higher, which resulted in higher overall production of gold, silver and copper.

Consolidated Mining & Smelting Co. of Canada Ltd. (From the company's annual report) — Studies on new process were continued, those of particular interest being concerned with the reclamation of tailings dumps and slag piles accumulated during previous operations of the company. As a result of this work, the old concentrator at Trail was reconditioned and put into operation. Important recoveries of metallic values have already been achieved. A small plant is now being built for the recovery of lead from slags by leaching methods.

TABLE 207. Principal Statistics of the Non-Ferrous Metallurgical Industry, 1946-1948

	1946	1947	1948
Number of companies	9	9	9
Number of plants	15	16	17
Number of administrative and office employees	2, 238	2, 538	2, 858
Salaries	\$ 6, 277, 577	7, 690, 271	8, 917, 548
Number of workmen	12, 308	14, 911	16, 843
Wages	\$ 24, 370, 784	33, 077, 600	43, 359, 289
Value of plant products (gross) ¹	\$ 304, 718, 524	453, 033, 942	576, 383, 967
Estimated cost of ores, concentrates, etc., treated	\$ 196, 864, 066	283, 199, 047	362, 227, 660
Cost of fuel and purchased electricity	\$ 22, 287, 572	28, 967, 359	36, 288, 387
Process supplies (other than ores, fuel, etc.)	\$ 16, 000, 964	25, 068, 884	31, 037, 029
Value added by smelting (net) ²	\$ 69, 565, 922	115, 798, 652	146, 830, 891

1. The gross value of production should not be interpreted as the ultimate sale value of finished metal only, as it represents the combined values of all industry (smelting, refining, etc.) and products (blister, copper matte, etc.) and in this sense represents a duplication of values.

2. See preceding text.

Note. Data in this report do not include those relating to Eldorado Mining and Refining Ltd. which mines and refines pitchblende products.

TABLE 208. Number of Workmen, by Months, 1947 and 1948 (Administrative and Office Employees not Included)

Month	1947		1948	
	Male	Female	Male	Female
January.....	13,923	65	15,831	56
February.....	14,091	63	16,078	52
March.....	14,161	61	16,338	54
April.....	14,238	61	16,560	56
May.....	14,412	63	17,247	61
June.....	14,751	66	17,501	64
July.....	15,418	69	17,599	64
August.....	15,332	69	17,395	60
September.....	15,572	65	17,326	61
October.....	15,493	68	17,088	61
November.....	15,426	69	16,229	54
December.....	15,328	67	16,225	53
Average.....	14,845	66	16,785	58

TABLE 209. Capacities of Canadian Copper Smelting and Refining Works, 1948

Company	Blast Furnaces		Reverberatories		Converters
	Number	Annual capacity: tons of ore and concentrates	Number	Annual capacity: tons of ore and concentrates	Number
Falconbridge Nickel Mines, Ltd.....	2	500,000	—	—	3
Hudson Bay Mining & Smelting Co. Ltd.....	—	—	1	540,000	3
Noranda Mines, Ltd.	—	—	2	1,300,000	5
International Nickel Co. of Canada Ltd:					
Copper Cliff.....	2	430,000	9	3,500,000	20
Coniston.....	4	950,000	—	—	5
Annual Capacity — short tons 1948					
Electrolytic Copper Refineries:					
Canadian Copper Refiners, Ltd.			112,000		
International Nickel Co. of Canada, Ltd.			168,000		

TABLE 210. Lead Smelting Capacity of Canada, 1948

Company	Number of blast furnaces	Annual capacity: tons of charge
Consolidated Mining & Smelting Company of Canada, Limited, Trail, British Columbia.....	5	711,100

TABLE 211. Capacity of Electrolytic Zinc Plants, 1948

Company	Estimated annual capacity for cathode zinc
	short tons
Consolidated Mining & Smelting Company of Canada, Ltd.	172,875
Hudson Bay Mining & Smelting Co., Ltd.	58,598

CHAPTER SEVEN

THE MINERAL FUELS INDUSTRIES

The Coal Mining Industry.

The Coke and Gas Industry.

The Natural Gas Industry.

The Peat Industry is included under non-metals, chapter 8.

The Petroleum Industry:

1. Crude Petroleum.

2. Petroleum Products.

Note:— In order to correlate data regarding fuels in Canada, this chapter has been prepared to include statistics of the coal, natural gas, and petroleum industries. This survey presents information regarding these industries as a whole, dealing principally with the mineral industry, although supplementary data are shown for closely allied manufacturing operations.

The Bureau issues an annual report on Coal Statistics for Canada which may be referred to for complete details of the Coal Mining Industry.

THE COAL MINING INDUSTRY

Production of coal in Canada during the calendar year 1948 amounted to 18,449,689 tons an increase of 16.3 per cent over the production of 15,868,866 tons in 1947. Compared with 1947, production increased 56.2 per cent in Nova Scotia, 51.2 per cent in New Brunswick, 0.6 per cent in Alberta, 1.2 per cent in Saskatchewan and 1.2 per cent in British Columbia. The large increase in 1948 production in the Maritime Provinces over 1947 was due to the strike in these provinces, which lasted from February 15 to June 10, 1947.

Imports of coal (landed coal), including briquettes, amounted to 31,054,148 tons in 1948, an increase of 1.6 per cent over the total of 30,564,129 tons brought into the Dominion during 1947. Exports totalled 1,273,262 tons, an increase of 78.2 per cent over the amount of 714,549 tons shipped out of the country during 1947.

Coal made available for consumption in 1948 amounted to 48,230,575 tons an increase of 5.5 per cent over the 45,718,446 tons available for consumption in 1947. These figures do not represent the quantity consumed during the year but are the actual tonnages of new coal made available for use and are calculated by adding production and imports and subtracting exports.

During 1948 Canadian coal mines employed 1,769 salaried employees and 22,550 wage-earners as compared with 1,463 and 20,764 respectively in 1947.

Change in Classification of Canadian Coal

Since 1945 the Dominion Bureau of Statistics has been using the classification adopted by the American Society for Testing Materials (A.S.T.M.). The new classification is the result of the joint work of the United States and Canadian chemists, fuel technologists, geologists and others, and is an attempt to provide a uniform system of classification for coals on this continent.

Report (*) No. 814, dated June, 1939, of the National Research Council of Canada, explains the specifications of the A.S.T.M. classification and its application to Canadian coals, and recommends the adoption of this classification for general use by the Dominion Government and the industry.

The application of the A.S.T.M. classification for statistical purposes involves a change only in the coals of the province of Alberta; coals of the other provinces remain classified as before.

The effect of the A.S.T.M. classification when applied to Alberta coals is a general promotion in rank of the low rank coals, in which coals formerly classified as sub-bituminous are raised to the rank of bituminous, and coals formerly classified as lignite are raised to the rank of sub-bituminous, with exception that coals from three former lignite districts — Halcourt, Lethbridge and Magrath — now become bituminous. Coals formerly classified as bituminous remain as such.

The new classification does not create any partition of individual districts, the districts being only re-grouped into the two divisions, bituminous and sub-bituminous, instead of bituminous, sub-bituminous and lignite as previously.

* Report on the A.S.T.M. Standard Specifications for Classification of Coals by Rank and by Grade and their Application to Canadian Coals, prepared for the Associate Committee on Coal Classification and Analysis of the National Research Council of Canada.

TABLE 212. Output of Coal, by Grades, 1933-1948

Calendar Year	Bituminous		Sub-bituminous		Lignite		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
		\$		\$		\$		\$
1933.....	8,875,309	30,072,157	2,096,506	4,556,595	931,529	1,295,210	11,903,344	35,923,962
1934.....	10,914,405	36,568,356	1,982,387	4,227,504	913,401	1,250,082	13,810,193	42,045,942
1935.....	10,671,305	35,609,964	2,291,810	5,052,070	924,891	1,301,076	13,888,006	41,963,110
1936.....	11,717,648	38,736,380	2,486,713	5,582,349	1,024,821	1,473,205	15,229,182	45,791,934
1937.....	12,496,642	42,049,957	2,286,792	5,200,045	1,052,520	1,502,046	15,835,954	48,752,048
1938.....	11,164,742	37,714,195	2,105,794	4,881,900	1,024,182	1,386,076	14,294,718	43,982,171
1939.....	12,614,236	42,442,382	2,117,324	4,975,636	961,138	1,258,972	15,692,698	48,676,990
1940.....	14,262,922	47,921,227	2,204,748	5,340,040	1,099,214	1,412,577	17,566,884	54,673,844
1941.....	14,531,862	50,088,519	2,370,050	6,254,222	1,324,009	1,716,889	18,225,921	58,059,630
1942.....	14,822,230	53,423,090	2,740,419	7,710,663	1,302,381	1,763,828	18,865,030	62,897,581
1943.....	13,358,664	51,798,996	2,833,422	8,643,340	1,666,971	2,435,213	17,859,057	62,877,549
1944.....	12,988,328	59,303,397	2,665,405	9,094,858	1,372,766	2,034,914	17,026,499	70,433,169
1945.....	11,774,164	54,689,261	3,199,554	10,572,059	1,532,995	2,327,082	16,506,713	67,588,402
1946.....	12,851,365	61,044,144	3,436,893	12,231,923	1,523,489	2,544,092	17,811,747	75,820,159
1947.....	11,062,660	60,268,923	3,235,059	14,277,219	1,571,147	2,928,812	15,868,866	77,474,954
1948.....	13,671,720	87,926,877	3,188,797	15,736,826	1,589,172	3,020,305	18,449,689	106,684,008

Figures shown in above table have been adjusted to agree with A.S.T.M. classification.

TABLE 213. Output and Value of Coal, by Kinds and Provinces, 1947 and 1948

Province	1947			1948		
	Number of mines	Quantity	Value	Number of mines	Quantity	Value
		tons	\$		tons	\$
NOVA SCOTIA (Bituminous)	42	4,118,196	27,175,251	43	6,430,991	47,874,569
NEW BRUNSWICK (Bituminous)	29	345,194	2,301,511	26	522,136	3,734,635
SASKATCHEWAN (Lignite)	63	1,571,147	2,928,812	62	1,589,172	3,020,305
ALBERTA:						
Bituminous	40	4,835,371	22,161,876	38	4,934,458	26,480,623
Sub-bituminous	155	3,235,059	14,277,219	160	3,138,797	15,736,826
Total	195	8,070,430	36,439,095	198	8,123,255	42,217,449
BRITISH COLUMBIA (Bituminous)	21	1,763,899	8,630,285	22	1,780,334	9,811,253
YUKON (Bituminous)	-	-	-	1	3,801	25,857
CANADA:						
Bituminous	132	11,062,660	60,268,923	130	13,671,720	87,926,877
Sub-bituminous	155	3,235,059	14,277,219	160	3,188,797	15,736,826
Lignite	63	1,571,147	2,928,812	62	1,589,172	3,020,305
Total	350	15,868,866	77,474,954	352	18,449,689	106,684,008

THE COKE AND GAS INDUSTRY

Production from coke plants and from illuminating and fuel gas plants in Canada during 1948 was valued at \$97,027,694, an increase of 33 per cent over the \$72,832,722 of the previous year. Output included 3,945,776 tons of coke valued at \$54,663,451 at the works, 74,768,498 M cubic feet of gas valued at \$34,205,926, and by-products valued at \$8,158,317.

An interesting development during the year was the conversion by some of the gas plants from other types of gas to propane. Four gas plants made this change in 1948. Data for these works which distributed propane through the regular gas mains are included in this review but figures on the distribution of propane in cylinders, a business which is expanding rapidly, are not included.

Twenty-seven coke and gas works operated in 1948, including 9 by-product and bee-hive plants, 14 retort coal and water gas plants, and 4 propane gas plants. Twelve of these works were located in Ontario, 5 in Quebec, 4 in British Columbia, 2 in Manitoba, 2 in Nova Scotia, 1 in New Brunswick and 1 in Alberta. In addition to these producers, 1 company in Quebec and 3 in Ontario purchased gas to be distributed for domestic or commercial use. Data covering their operations have been included to round out the figures for the industry.

Output of coke from gas retorts, by-product and bee-hive ovens totalled 3,945,776 tons in 1948 compared with 3,514,151 tons in 1947 and 3,363,109 tons in 1946. By-product and bee-hive ovens produced 3,678,818 tons of coke in 1948 and gas retorts made 266,958 tons. In addition, 87,438 tons of petroleum coke were recovered in petroleum refineries and 17,600 tons of pitch coke in coal tar distillation plants.

Data on the distribution of coke (except petroleum and pitch coke) by the producers show that 103,620 tons were sold direct to domestic consumers, 2,094,259 tons were used in associated works operated by the producing companies; 416,072 tons were used by coke plants as fuel or to make water gas; 708,935 tons were sold direct to consumers for foundry and other uses (other than domestic); 525,216 tons were sold to dealers for resale, and 172,266 tons were sold for export. Total stocks of coke in the hands of producers amounted to 272,395 tons at the end of 1948.

Imports into Canada of coke made from coal decreased to 544,081 tons in 1948 from 572,676 tons in 1947, and exports increased to 167,299 tons from 106,552 tons. Imports of petroleum coke during this period increased to 307,498 tons from 259,429 tons and exports (including re-exports of imported coke) increased to 32,785 tons from 27,963 tons.

Manufactured gas, sold and used, amounted to 74,768,498 M cubic feet in 1948 including 56,839,800 M cubic feet from by-product ovens and 17,928,698 M cubic feet from gas plants. Sales of gas by the producers totalled 24,606,638 M cubic feet, of which 14,451,632 M cubic feet were from by-product ovens and 10,155,006 M cubic feet were from gas works. Most of the remaining gas was used as fuel in the producing plants or in their associated metallurgical works. These figures do not include 51,090 M cubic feet of (Pintsch) oil gas for lighting railway cars, 12,020,328 M cubic feet of still gas recovered at petroleum refineries, nor iron blast furnace gas and producer gas which was recovered and used by the producers but for which no records are available.

The number of customers served with manufactured illuminating and fuel gas as of December 31, 1948 was 580,044, the length of distributing mains was 4,095 miles, and the average calorific value of the gas sold, not including propane gas, ranged from 457—540 B.T.U. per cubic foot.

TABLE 214. Materials Used in Coke and Gas Plants, 1947 and 1948

Material	Unit of measure	1947		1948	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Bituminous coal carbonized in ovens or retorts:					
(a) Canadian.....	ton	1,067,833	7,032,481	1,158,803	8,825,164
(b) Imported	ton	3,532,819	28,800,154	4,077,123	40,818,855
Bituminous coal for making water gas:					
(a) Canadian.....	ton	—	—	669	6,567
(b) Imported	ton	7,194	72,687	10,910	125,073
Coke for gas-making:					
(a) Purchased	ton	14,870	195,277	15,028	234,977
(b) Companies' own make	ton	111,187	1,082,795	147,127	1,556,662
Oil used for enriching water gas	Imp. gal.	15,056,941	1,373,064	16,637,913	1,983,422
Absorbing and wash oil.....	Imp. gal.	248,804	33,218	230,973	42,035
Caustic soda	lb.	1,023,401	24,375	1,209,709	31,888
Lime	ton	1,186	16,561	1,099	16,167
Water	—	—	47,797	—	41,611
Iron oxide	ton	10,090	77,440	8,853	72,622
Sulphuric acid, 100%.....	lb.	54,774,298	491,402	70,422,400	715,757
All other materials	—	—	657,529	—	954,997
Total Cost	—	—	39,904,780	—	54,885,797

TABLE 215. Products Made in Coke and Gas Plants, 1947 and 1948

Product	Unit of measure	1947		1948	
		Quantity	Gross selling value at works	Quantity	Gross selling value at works
			\$		\$
GAS MADE:					
Retort coal gas	M cu. ft.	9,899,523	—	11,254,016	—
Coke oven gas	M cu. ft.	45,770,402	—	51,832,387	—
Producer gas	M cu. ft.	1,364,332	—	870,388	—
Water gas	M cu. ft.	7,768,204	—	9,943,554	—
Propane, butane and oil gas	M cu. ft.	208,215	—	367,313	—
Total Gas Made	M cu. ft.	65,010,676	—	74,267,658	—
GAS SOLD OR USED:					
Gas sold	M cu. ft.	22,947,000	22,435,440	24,606,638	25,581,734
Gas used in own coke or gas plants	M cu. ft.	17,862,758	2,663,788	18,379,417	3,344,833
Gas used in associated metallurgical works	M cu. ft.	22,673,155	2,213,138	28,821,801	3,694,802
Gas otherwise accounted for but not sold	M cu. ft.	273,097	91,664	518,030	251,320
Gas not accounted for	M cu. ft.	2,117,299	995,421	2,442,612	1,333,237
Total Gas Sold or Used	M cu. ft.	65,873,309	28,399,451	74,768,498	34,205,926
COKE MADE:					
Coke from by-product or bee-hive ovens	ton	2,973,026	35,448,565	3,435,602	50,181,726
Coke from gas retorts	ton	261,080	2,964,387	264,353	3,354,872
Coke breeze from by-product ovens	ton	277,195	912,191	243,216	1,116,858
Coke breeze from gas retorts	ton	2,850	14,748	2,605	9,995
Total Coke	ton	3,514,151	39,339,891	3,945,776	54,663,451
OTHER PRODUCTS:					
Tar	Imp. gal.	32,575,317	2,548,138	37,741,081	4,439,999
Ammonia liquor	lb. NH ₃	1,482,835	14,828	1,393,447	13,934
Ammonium sulphate	pound	66,001,762	1,027,992	83,255,905	1,507,581
Benzol	Imp. gal.	5,780,254	1,124,537	6,009,577	1,527,251
Toluol, xylol and naphthalene	Imp. gal.	1,035,200	283,111	1,445,796	550,398
All other products	—	—	94,774	—	119,154
Grand Total	—	—	72,832,722	—	97,027,694

THE NATURAL GAS INDUSTRY

During 1948 the production of natural gas in Canada amounted to 58,603,269 thousand cubic feet valued at \$15,632,507 compared with 52,656,567 thousand cubic feet worth \$13,429,558 in 1947. These figures include the natural gas sold for domestic, industrial or other uses and also the gas used in the field by the well operators, but the gas which is allowed to go to waste is not included.

Alberta was the leading province with a production of 48,965,217 thousand cubic feet. Of this total amount, 28,410,306 thousand cubic feet came from Turner Valley and 12,736,227 thousand cubic feet from the Viking-Kinsella field. The data do not include the quantity of gas which escaped when the Atlantic No. 3 well blew uncontrolled in the Leduc field.

Production of natural gas in both Ontario and Saskatchewan was higher in 1948 than in the preceding year.

The natural gas industry employed an average of 1,831 persons in 1948. Salaries and wages amounted to \$2,918,941; fuel and electricity cost \$62,580, and \$4,485 were spent for process supplies. Employment statistics relating to wells which produce both natural gas and crude petroleum are included in the crude petroleum industry.

TABLE 216. Principal Statistics for the Natural Gas Industry, 1939-1948

Year	Number of firms	Number of wells ¹	Average number of employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies	Gross selling value of products
				\$	\$	\$	\$
1939.....	222	3,352	1,990	2,536,220	82,877	15,520	10,732,543
1940.....	236	3,438	2,189	2,748,740	85,561	8,793	11,203,103
1941.....	231	3,424	2,161	2,841,795	103,229	4,975	11,223,103
1942.....	212	3,566	1,940	2,826,811	92,489	12,313	11,356,350
1943.....	191	3,558	1,882	2,846,514	181,841	7,899	11,552,696
1944.....	211	3,621	1,810	2,885,654	188,003	13,149	9,772,357
1945.....	218	3,748	1,890	2,993,091	227,514	18,298	10,860,594
1946.....	219	3,825	1,655	2,491,361	226,980	21,457	10,588,175
1947.....	186	3,799	1,784	3,057,249	220,344	19,975	12,333,332
1948.....	175	3,833	1,831	2,918,941	62,580	4,485	14,689,737

1. See note to Table 217.

TABLE 217. Principal Statistics, by Provinces, 1947 and 1948

Province	Number of firms	Number of wells ¹	Average number of employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies	Gross selling value of products
				\$	\$	\$	\$
1947							
New Brunswick	2	45	77	135,958	12,901	—	299,907
Ontario	158	3,608	1,064	1,803,138	162,977	18,759	5,334,991
Saskatchewan	4	6	5	7,949	—	—	68,891
Alberta	22	140	638	1,110,204	44,466	1,216	6,629,543
Canada	186	3,799	1,784	3,057,249	220,344	19,975	12,333,332
1948							
New Brunswick	2	39	90	177,426	10,287	—	307,310
Ontario	150	3,629	1,004	1,310,207	4,286	4,469	6,958,247
Saskatchewan	2	18	6	8,042	—	—	47,727
Alberta	21	147	731	1,423,266	48,007	16	7,376,453
Canada	175	3,833	1,831	2,918,941	62,580	4,485	14,689,737

1. Wells which produce natural gas only; if both petroleum and natural gas were produced the wells were included in the Crude Petroleum Industry.

TABLE 218. Production of Natural Gas, 1929-1948

Year	Quantity	Value	Year	Quantity	Value
	M cu. ft.	\$		M cu. ft.	\$
1929.....	28,378,462	9,977,124	1939.....	35,185,146	12,507,307
1930.....	29,376,919	10,289,985	1940.....	41,232,125	13,000,593
1931.....	25,874,723	9,026,754	1941.....	43,495,353	12,665,116
1932.....	23,420,174	8,899,462	1942.....	45,697,359	13,301,655
1933.....	23,138,103	8,712,234	1943.....	44,276,216	13,159,418
1934.....	23,162,324	8,759,652	1944.....	45,067,158	11,422,541
1935.....	24,910,786	9,363,141	1945.....	48,411,585	12,309,564
1936.....	28,113,348	10,762,243	1946.....	47,900,484	12,165,050
1937.....	32,380,991	11,674,802	1947.....	52,656,567	13,429,558
1938.....	33,444,791	11,587,450	1948.....	58,603,269	15,632,507

TABLE 219. Production of Natural Gas, by Provinces, 1939-1948

Year	New Brunswick	Ontario	Saskatchewan	Alberta	Northwest Territories	Canada
(M cubic feet)						
1939.....	606,382	11,966,581	96,423	22,513,660	1,500	35,185,146 ¹
1940.....	616,041	13,053,403	100,773	27,459,808	1,500	41,232,125 ¹
1941.....	653,542	11,828,703	106,168	30,905,440	1,500	43,495,353
1942.....	619,380	10,476,770	117,124	34,482,585	1,500	45,697,359
1943.....	675,029	7,914,408	116,201	35,569,078	1,500	44,276,216
1944.....	702,464	7,082,508	119,116	37,161,570	1,500	45,067,158
1945.....	653,230	7,199,970	163,824	40,393,061	1,500	48,411,585
1946.....	541,010	7,051,309	209,569	40,097,096	1,500	47,900,484
1947.....	489,810	7,785,921	274,193	44,106,643	—	52,656,567
1948.....	420,352	8,590,429	477,271	48,965,217	150,000	58,603,269

1. Includes 600 M cu. ft. in Manitoba.

TABLE 220. Production¹ of Natural Gas, by Provinces, 1947 and 1948

Province	1947		1948	
	M cu. ft.	Value	M cu. ft.	Value
		\$		\$
New Brunswick	489,810	279,790	420,352	287,446
Ontario	7,785,921	5,334,991	8,590,429	6,958,247
Saskatchewan	274,193	68,891	477,271	47,727
Alberta	44,106,643	7,745,886	48,965,217	8,324,087
Northwest Territories	—	—	150,000	15,000
Canada	52,656,567	13,429,558	58,603,269	15,632,507

1. Sold and used by producer.

TABLE 221. Production¹ of Natural Gas, by Months and by Provinces, 1948

Month	New Brunswick	Ontario	Saskatchewan	Alberta	Canada ²
(M cu. ft.)					
January.....	47,977	1,043,970	62,452	4,914,299	6,081,198
February.....	40,162	918,970	62,224	5,471,477	6,505,333
March.....	36,719	853,955	56,636	5,104,232	6,064,042
April.....	36,768	666,000	59,668	4,314,604	5,089,540
May.....	36,518	656,784	32,242	3,174,605	3,912,649
June.....	34,527	619,553	12,901	2,630,262	3,309,743
July.....	29,027	586,835	11,051	2,686,802	3,326,215
August.....	22,905	561,984	10,685	2,796,902	3,404,976
September.....	24,004	559,100	15,195	3,041,211	3,652,010
October.....	33,675	690,838	27,152	3,893,283	4,657,448
November.....	38,682	657,030	50,387	4,732,715	5,491,314
December.....	39,388	775,410	76,678	6,204,825	7,108,801
Total.....	420,352	8,590,429	477,271	48,965,217	58,603,269

1. Sales and consumption by producers.

2. Includes 150,000 M cu. ft. in the Northwest Territories.

TABLE 222. Production¹ of Natural Gas in Alberta, by Fields, 1948

Field	M cu. ft.
Turner Valley	28,410,306
Bow Island	561,142
Foremost	101,273
Viking-Kinsella	12,736,227
Medicine Hat	3,544,804
Redcliff	1,418,255
Leduc	907,395
Other fields	1,285,815
Total Alberta	48,965,217

1. Does not include waste gas and absorption plant shrinkage amounting to about 12 million M cu. ft.

TABLE 223. Production of Natural Gas in Ontario, by Fields, 1947 and 1948

County	Field	1947	1948
		(M cu. ft.)	
Essex	Kingsville	19,108	18,357
Kent	Tilbury, Romney and Raleigh	2,285,249	2,210,665
	Dover	129,184	134,780
	Chatham	466,162	636,226
	Zone	1,251,338	1,488,010
Lambton	Dawn		
	Oil Springs	652,303	1,241,433
Oxford	Brownsville	15,825	25,816
Elgin	Baynam	24,640	48,526
	Malahide	43,459	10,866
Norfolk	Norfolk	414,397	413,970
Lincoln	Lincoln		
Haldimand	Haldimand	1,970,961	1,772,101
Wentworth	Wentworth		
Welland	Welland	372,974	471,488
Brant	Onondaga, Brantford and Tuscarora	73,821	51,691
Private wells	Harwich and Howard Tps.	6,000	6,500
	.....	60,500	60,000
Total Produced		7,785,921	8,590,429

TABLE 224. Number of Gas Wells in Canada, by Provinces, 1946-1948

	New Brunswick	Ontario	Saskatchewan	Alberta	Canada
Productive wells at beginning of year.....					
1946	39	3,504	9	126	3,678
1947	41	3,580	4	134	3,759
1948	43	3,608	4	142	3,797
Number of productive wells drilled					
1946	2	221	2	9	234
1947	2	190	-	11	203
1948	1	212	16	6	235
Number of dry wells drilled					
1946	1	129	1	-	131
1947	2	106	-	-	108
1948	-	107	2	1	110
Number of wells abandoned					
1946	-	120	7	1	128
1947	-	120	-	3	123
1948	7	195	2	1	205
Productive wells at end of year					
1946	41	3,580	4	134	3,759
1947	43	3,608	4	142	3,797
1948	37	3,629	18	147	3,831

TABLE 225. Natural Gas Wells in Ontario, by Townships, 1947 and 1948

Township	Number of producing wells in operation December 31, 1947	Number of producing wells in operation December 31, 1948	Number of idle wells in 1948	Number of wells abandoned 1948	Number of wells drilled 1948	Number of producing wells drilled 1948
Aldborough	-	-	7	-	4	7
Bayham	27	21	20	7	1	10
Bertie	184	189	7	5	4	10
Binbrook	44	43	2	1	-	-
Brantford	2	2	-	-	-	-
Caistor	93	96	-	5	1	8
Camden Gore	14	15	1	1	3	1
Canboro	159	153	16	3	4	10
Cayuga North	245	242	2	13	7	8
Cayuga South	100	103	-	6	12	11
Charlotteville	15	15	-	-	-	-
Chatham	23	23	-	2	1	-
Crowland	38	40	3	2	1	6
Dawn	31	26	-	5	2	-
Delhi Village	3	3	-	-	-	-
Dereham	7	7	-	8	-	3
Dover	14	14	-	1	-	1
Dunn	97	97	7	2	7	7
Dunwich	-	-	-	-	2	-
Enniskillen	3	3	1	-	3	-
Gainsborough	11	10	-	2	-	-
Glanford	10	10	-	-	-	-
Gosfield South	15	21	12	-	-	6
Houghton	4	7	-	-	2	3
Humberstone	92	104	2	3	1	14
Malahide	8	7	9	-	-	-
Malden	-	-	5	-	1	2
Mersea	3	3	-	2	-	-
Middleton	32	31	4	6	1	2
Moore	2	7	1	-	5	5
Mosa	-	-	-	-	2	-
Moulton	104	112	-	2	1	8
Norwich South	1	1	-	-	-	-
Onelda	122	131	5	2	8	16
Onondaga	17	11	5	3	-	-
Port Dover Village	3	3	-	-	-	-
Port Rowan	4	4	-	-	-	-
Rainham	289	285	4	21	2	6
Raleigh	54	51	6	3	-	-
Romney	128	124	5	4	-	1
Senaca	137	137	6	7	1	4
Sherbrooke	15	15	1	1	-	1
Sombra	5	5	1	3	-	1
Stamford	5	5	-	-	-	-
Thorold	9	15	1	1	2	6
Tilbury East	114	110	2	5	-	2
Townsend	63	61	-	2	-	-
Tuscarora	47	42	-	7	-	2
Wainfleet	41	41	-	1	2	1
Walpole	530	515	16	41	4	7
Walsingham North	22	25	-	-	5	3
Walsingham South	16	18	-	-	-	2
Warwick	-	-	-	-	1	-
Welland	-	1	-	-	1	1
Willoughby	57	61	1	2	5	5
Windham	21	19	-	2	-	-
Woodhouse	93	107	14	-	9	15
Yarmouth	4	4	1	-	-	-
Zone	42	44	-	-	2	2
Wells in surface drift	69	55	-	14	-	-
Private wells	320	335	-	-	-	15
Total	3,608	3,629	167	195	107	212

TABLE 226. Natural Gas Pipeline Mileage, 1947 and 1948

Province	Actual miles of mains				Miles of equivalent 3" mains			
	Gathering and transmission		Distribution		Gathering and transmission		Distribution	
	1947	1948	1947	1948	1947	1948	1947	1948
New Brunswick.....	20	20	65	65	36	36	73	73
Ontario.....	2,343	2,289	2,092	1,990	3,877	3,797	2,453	2,228
Saskatchewan.....	4	10	8	—	3	15	5	—
Alberta.....	878	916	744	799	2,760	1,977	1,196	1,282
Canada.....	3,245	3,235	2,909	2,854	6,676	5,825	3,727	3,583

TABLE 227. Sales¹ of Manufactured and Natural Gas, 1947 and 1948

	1947			1948		
	Number of customers	Quantity sold	Revenue from sales	Number of customers	Quantity sold	Revenue from sales
		M cu. ft.	\$		M cu. ft.	\$
MANUFACTURED GAS						
Domestic.....	524,443	14,071,745	15,691,566	540,781	14,481,351	17,608,776
House heating.....	5,266	1,955,875	1,142,464	5,179	2,113,784	1,444,026
Industrial.....	2,866	4,110,970	2,713,188	9,788	4,024,599	3,210,386
Commercial.....	31,465	4,497,920	4,073,631	24,172	4,975,321	4,812,378
Miscellaneous.....	123	30,022	28,202	124	32,634	33,213
Total.....	564,163	24,666,532	23,649,051	580,044	25,627,699	27,108,779
NATURAL GAS						
Domestic.....	195,555	19,561,089	8,936,875	203,291	20,992,397	10,139,163
Industrial.....	1,232	11,486,678	2,063,933	1,737	12,825,474	2,576,805
Commercial.....	13,146	8,637,814	2,296,257	13,986	9,831,775	2,610,828
Miscellaneous.....	441	148,830	30,508	343	155,028	34,297
Total.....	210,374	39,834,411	13,327,573	219,357	43,804,674	15,361,093
Total — All Gas.....	774,537	64,497,943	36,976,624	799,401	69,432,373	42,469,872

1. Sales by distributing companies to final consumers, amounts used by producers are not included.

TABLE 228. Sales¹ of Natural Gas, by Areas, 1947 and 1948

	1947		1948	
	Quantity sold	Revenue from sales	Quantity sold	Revenue from sales
	M cu. ft.	\$	M cu. ft.	\$
EASTERN CANADA				
Domestic.....	6,944,604	5,424,674	6,565,829	6,112,998
Industrial.....	1,215,269	756,898	1,300,502	1,105,061
Commercial.....	615,861	459,247	586,660	493,647
Miscellaneous ²	52,407	26,321	40,199	28,617
Total.....	8,828,141	6,667,140	8,493,190	7,740,323
WESTERN CANADA				
Domestic.....	12,616,485	3,512,201	14,426,568	4,026,165
Industrial.....	10,271,409	1,307,035	11,524,972	1,471,744
Commercial.....	8,021,953	1,837,010	9,245,115	2,117,131
Miscellaneous ²	96,423	4,187	114,829	5,680
Total.....	31,006,270	6,660,433	35,311,484	7,620,770
CANADA — TOTAL				
Domestic.....	19,561,089	8,936,875	20,992,397	10,139,163
Industrial.....	11,486,678	2,063,933	12,825,474	2,576,805
Commercial.....	8,637,814	2,296,257	9,831,775	2,610,828
Miscellaneous ²	148,830	30,508	155,028	34,297
Total.....	39,834,411	13,327,573	43,804,674	15,361,093

1. See footnote to table 227.

2. Includes some free customers.

TABLE 229. Employees, Salaries and Wages, by Provinces, 1947 and 1948

	Number of Employees					Total	Salaries	Wages	Total salaries and wages
	On Salaries		On Wages						
	Male	Female	Male	Female					
1947						\$	\$	\$	
New Brunswick.....	—	—	76	1	77	—	135,958	135,958	
Ontario.....	83	75	901	5	1,064	344,362	1,458,776	1,803,138	
Saskatchewan.....	3	—	2	—	5	4,084	3,865	7,949	
Alberta.....	74	36	519	9	638	233,379	876,825	1,110,204	
Canada.....	160	111	1,498	15	1,784	581,825	2,475,424	3,057,249	
1948									
New Brunswick.....	—	—	88	2	90	—	177,426	177,426	
Ontario.....	73	70	858	3	1,004	141,198	1,169,009	1,310,207	
Saskatchewan.....	1	1	3	1	6	300	7,742	8,042	
Alberta.....	81	41	599	10	731	275,763	1,147,503	1,423,266	
Canada.....	155	112	1,548	16	1,831	417,261	2,501,680	2,918,941	

TABLE 230. Workmen, by Months, 1947 and 1948 (On the last work-day of each month)

Month	1947			1948		
	Male	Female	Total	Male	Female	Total
January.....	1,140	7	1,147	1,172	14	1,186
February.....	1,169	8	1,177	1,161	17	1,178
March.....	1,156	10	1,166	1,192	11	1,203
April.....	1,323	13	1,336	1,289	9	1,298
May.....	1,506	13	1,519	1,652	13	1,665
June.....	1,609	17	1,626	1,836	15	1,851
July.....	1,695	26	1,721	1,853	20	1,873
August.....	1,698	25	1,723	1,814	17	1,831
September.....	1,753	15	1,768	1,777	21	1,798
October.....	1,798	16	1,814	1,799	17	1,816
November.....	1,622	13	1,635	1,567	16	1,583
December.....	1,340	10	1,350	1,323	16	1,339
Average.....	1,498	15	1,513	1,548	16	1,564

THE CRUDE PETROLEUM INDUSTRY

Deliveries of crude petroleum and natural gasoline by Canadian producers in 1948 were the greatest on record at 12,286,660 barrels valued at \$37,418,895, compared with 7,692,492 barrels valued at \$19,575,682 in 1947, an increase of approximately 60 per cent in quantity and 92 per cent in value. The former high of 10,364,796 barrels was established in 1942.

Output in Alberta increased to 10,973,583 barrels in 1948 from 6,809,284 barrels in the previous year. The Leduc field, which came into production in 1947, had a phenomenal growth, rising from 372,000 barrels in its first year of output to 4,657,000 barrels in the year under review. Toward the year-end some shipments were made from the Redwater field, a new area, which promises to exceed the other known Alberta fields in quantity of oil reserves.

Production in Saskatchewan increased to 849,166 barrels from 540,117 barrels in the preceding year. Ontario's production increased 35 per cent to 176,989 barrels, and the output of the Northwest Territories advanced 50 per cent to 349,763 barrels. There was a slight decline in the crude oil shipments from New Brunswick wells.

The crude petroleum firms which had producing wells reported the employment of 1,641 persons to whom \$4,391,929 were paid in wages and salaries. Fuel and electricity cost \$1,939,856 and \$112,952 were spent for process supplies.

Imports of crude petroleum into Canada totalled 77,633,690 barrels in 1948. The supply came from United States, Venezuela, Aden, Iran, Trinidad, Netherlands West Indies and Mexico.

TABLE 231. Principal Statistics for the Crude Petroleum Industry, 1939-1948

Year	Number of operating wells	Number of employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies	Gross value of sales
			\$	\$	\$	\$
1939.....	2,389	1,780	2,567,983	707,067	724,988	10,742,977
1940.....	2,360	1,741	2,835,410	934,834	533,161	11,486,078
1941.....	2,312	1,844	3,254,817	609,616	194,182	15,011,324
1942.....	2,253	1,972	3,648,965	971,504	235,959	16,876,123
1943.....	2,197	2,399	5,212,895	709,879	202,479	16,906,780
1944.....	2,264	2,547	5,814,676	1,000,484	242,311	15,818,358
1945.....	2,222	1,968	3,898,662	748,351	117,708	14,121,921
1946.....	2,314	1,563	3,260,571	914,551	109,555	14,725,139
1947.....	2,296	1,296	3,055,108	759,635	116,957	19,543,301
1948.....	2,581	1,641	4,391,929	1,939,856	112,952	37,388,975

Note. Data for New Brunswick are included in the Natural Gas Industry

TABLE 232. Principal Statistics for the Crude Petroleum Industry, by Provinces, 1948¹

	Ontario	Saskatchewan	Alberta	Northwest Territories	Canada
Number of firms.....	106	24	115	1	246
Number of active wells ²	1,489	114	886	66	3,42,581
Number of employees:					
On salary.....	17	4	87	—	108
On wages.....	120	32	1,360	21	1,533
Total.....	137	36	1,447	21	1,641
Salaries and wages:					
Salaries..... \$	45,595	5,598	260,270	—	311,463
Wages..... \$	154,853	69,480	3,797,897	58,236	4,080,466
Total..... \$	200,448	75,078	4,058,167	58,236	4,391,929
Selling value of products (gross)..... \$	608,109	976,541	35,127,751	676,574	37,388,975
Cost of fuel and electricity..... \$	36,183	12,191	1,876,482	15,000	1,939,856
Cost of process supplies used..... \$	36,104	3,824	73,024	—	112,952
Selling value of products (net)..... \$	535,822	960,526	33,178,245	661,574	35,336,167

1. Data for New Brunswick are included in the Natural Gas Industry.
2. Includes wells still drilling and dry wells completed in year specified.
3. Includes 26 in New Brunswick.
4. Includes 74 gas wells.

TABLE 233. Production and Producers' Sales of Crude Petroleum, by Provinces, 1947 and 1948

Province	1947			1948		
	Production	Sales	Value of sales	Production	Sales	Value of sales
	(barrels)		\$	(barrels)		\$
New Brunswick.....	22 120	23, 129	32 301	21 372	22 872	26 866
Ontario.....	131, 255	131, 295	350, 000	176, 989	176, 989	608, 109
Saskatchewan.....	540, 117	540, 117	614, 156	849, 166	849, 166	976, 541
Alberta.....	6, 809, 284	6, 770, 477	18, 078, 907	10, 973, 583	10, 888, 592	35, 127, 751
Northwest Territories.....	231, 844	227, 474	500, 238	349, 763	350, 541	676, 574
Canada.....	7, 735, 669	7, 692, 492	19, 575, 682	12, 370, 873	12, 286, 660	37, 418, 895

1. Includes natural gasoline.

TABLE 234. Well Output of Crude Petroleum in Alberta, by Fields, 1946-1948

Field	1946	1947	1948
		(barrels)	
Turner Valley.....	5, 937, 362	5, 022, 350	4, 432, 084
Leduc.....	-	372, 427	4, 657, 371
Redwater.....	-	-	36, 875
Conrad.....	212, 645	202, 929	179, 627
Taber.....	206, 925	205, 236	201, 527
Princess.....	64, 953	106, 920	186, 393
Wainwright.....	15, 114	18, 325	17, 131
Vermilion.....	183, 946	138, 401	112, 331
Lloydminster.....	76, 187	304, 236	648, 065
Other.....	7, 190	11, 235	33, 534
Total Crude.....	6, 704, 322	6, 382, 059	10, 504, 928
Natural gasoline.....	434, 210	427, 225	468, 655
Total.....	7, 138, 532	6, 809, 284	10, 973, 583

TABLE 235. Production of Crude Petroleum in Ontario, by Fields, 1946-1948

Field	1946	1947	1948
		(barrels)	
Petrolia and Enniskillen.....	44, 323	41, 028	40, 603
Oil Springs.....	27, 995	25, 683	26, 165
Moore township.....	259	132	544
Sarnia township.....	152	80	124
Plympton township.....	28	-	3
Bothwell township and Thamesville.....	18, 610	16, 025	15, 238
Dover, Romney, Raleigh and Tilbury.....	4, 671	4, 545	4, 439
Onondaga.....	89	80	69
Mosa township.....	17, 351	19, 165	18, 341
Dawn and Euphemia.....	1, 620	1, 740	1, 821
Warwick, Metcalfe and Adelaide townships.....	237	163	7, 312
Somba township.....	7, 747	2, 390	2, 479
Total.....	123, 082	131, 295	176, 989

TABLE 236. Producers' Sales of Crude Petroleum, by Provinces, 1934-1948

Year	New Brunswick	Ontario	Saskatchewan	Alberta	Northwest Territories	Canada
						(Barrels of 35 Imperial gallons)
1934.....	11, 106	141, 385	-	1, 253, 966	4, 438	1, 410, 895
1935.....	12, 954	165, 041	-	1, 263, 510	5, 115	1, 446, 620
1936.....	17, 112	165, 495	-	1, 312, 368	5, 399	1, 500, 374
1937.....	18, 089	165, 205	-	2, 749, 085	11, 371	2, 943, 750
1938.....	22, 776	172, 641	-	6, 751, 312	22, 855	6, 966, 084
1939.....	22, 799	206, 379	-	7, 576, 932	20, 191	7, 826, 301
1940.....	22, 167	187, 644	331	8, 362, 203	18, 633	8, 590, 978
1941.....	31, 359	160, 238	-	9, 918, 577	23, 664	10, 133, 838
1942.....	28, 089	143, 845	-	10, 117, 073	75, 789	10, 304, 796
1943.....	24, 530	132, 492	-	9, 601, 530	293, 750	10, 052, 302
1944.....	23, 296	125, 067	-	8, 727, 366	1, 223, 675	10, 059, 404
1945.....	30, 140	113, 325	14, 374	7, 979, 786	345, 171	8, 482, 796
1946.....	28, 584	123, 082	118, 686	7, 137, 921	177, 282	7, 585, 555
1947.....	23, 129	131, 295	540, 117	6, 770, 477	227, 474	7, 692, 492
1948.....	21, 372	176, 989	849, 166	10, 888, 592	350, 541	12, 286, 660

TABLE 237. Production of Crude Petroleum, by Months, 1948

Month	New Brunswick	Ontario	Saskatchewan	Alberta	Northwest Territories	Canada
	(Barrels of 35 Imperial gallons)					
January.....	1,589	12,895	73,753	687,447	1,955	777,639
February.....	1,352	12,138	66,025	665,724	34,654	779,893
March.....	1,470	12,030	58,069	703,019	36,640	816,504
April.....	1,691	13,522	38,936	702,688	40,090	796,927
May.....	1,774	14,766	57,334	804,531	39,024	917,429
June.....	1,726	15,272	83,585	900,508	37,472	1,038,563
July.....	1,999	16,103	96,764	1,034,437	30,710	1,179,613
August.....	1,827	15,210	93,749	1,104,113	29,703	1,244,602
September.....	1,792	14,923	80,757	878,018	25,288	1,100,778
October.....	1,770	15,030	75,274	1,076,512	36,662	1,206,734
November.....	1,863	17,712	79,018	1,139,160	26,780	1,264,533
December.....	2,186	16,370	47,307	1,171,346	10,445	1,247,654
Total.....	21,372	176,989	849,166	10,973,583	349,763	12,370,873

TABLE 238. Petroleum Wells, by Provinces, 1946-1948

	New Brunswick	Ontario	Saskatchewan	Alberta	Northwest Territories	Canada
Productive wells at beginning of year:						
1946.....	26	1,579	3	479	58	2,145
1947.....	27	1,610	18	517	58	2,230
1948.....	27	1,559	77	519	58	2,240
Number of productive wells drilled:						
1946.....	1	26	18	49	—	94
1947.....	—	22	54	76	—	152
1948.....	—	26	20	273	8	327
Number of wells abandoned:						
1946.....	—	34	3	11	—	48
1947.....	—	84	—	64	—	148
1948.....	1	96	3	18	—	118
Number of dry wells drilled:						
1946.....	—	42	—	51	—	93
1947.....	—	33	1	24	—	58
1948.....	—	36	11	68	—	115
Number of productive wells in operation at end of year:						
1946.....	27	1,610	18	517	58	2,230
1947.....	27	1,559	77	519	58	2,240
1948.....	26	1,489	94	774	66	2,444

TABLE 239. Employees, Salaries and Wages in the Crude Petroleum Industry, 1943-1948

Year	Number of employees					Salaries	Wages	Total salaries and wages
	On salaries		On wages		Total employees			
	Male	Female	Male	Female				
						\$	\$	\$
1943.....	496	155	1,736	12	2,399	1,547,605	3,665,290	5,212,895
1944.....	641	238	1,646	22	2,547	2,050,411	3,764,265	5,814,676
1945.....	643	191	1,107	27	1,968	1,606,820	2,291,842	3,898,662
	Administration		Workmen		Total	Administrators' earnings \$	Workmen's earnings \$	Total earnings \$
	Male	Female	Male	Female				
1946.....	324	81	1,141	17	1,563	990,683	2,269,888	3,260,571
1947.....	105	19	1,156	16	1,296	292,173	2,762,935	3,055,108
1948.....	87	21	1,526	7	1,641	311,463	4,080,466	4,391,929

TABLE 240. Workmen, by Months, in the Crude Petroleum Industry, 1947 and 1948 (Number on pay-roll on the last work day of each month)

Month	1947			1948		
	Male	Female	Total	Male	Female	Total
January.....	895	18	913	1,247	5	1,252
February.....	904	17	921	1,287	5	1,292
March.....	945	16	961	1,366	5	1,371
April.....	969	16	985	1,357	5	1,362
May.....	1,070	16	1,086	1,399	5	1,404
June.....	1,192	16	1,208	1,558	4	1,562
July.....	1,265	14	1,279	1,648	5	1,653
August.....	1,281	14	1,295	1,664	6	1,670
September.....	1,229	17	1,246	1,636	6	1,642
October.....	1,271	17	1,288	1,643	9	1,652
November.....	1,290	17	1,307	1,630	8	1,638
December.....	1,264	17	1,281	1,679	5	1,684
Average.....	1,156	16	1,172	1,526	7	1,641

TABLE 241. Imports of Petroleum, Asphalt and Their Products, 1947 and 1948

Item	1947		1948	
	Quantity	Value	Quantity	Value
		\$		\$
Asphaltum or asphalt, solid or not.....	cwt. 218,012	629,388	211,520	595,376
Oil, imported by miners or mining companies, for the concentration of ores or metals.....	gal. 129,977	104,846	126,890	92,050
Crude petroleum for refining .8155 specific gravity (42. O A.P.I.) or heavier at 60° Fah.	M gal. 2,395,283	127,459,111	2,643,758	191,803,368
Crude petroleum, n.o.p.	gal. 353,047	13,010	814,339	46,256
Fuel oil, ex-warehoused, for ships' stores.....	gal. 11,170,800	510,031	12,504,179	756,688
Coal oil and kerosene lighter than .8236 specific gravity at 60° Fah., n.o.p.	gal. 147,427,903	12,448,086	76,868,321	8,791,014
Engine distillate .8017 specific gravity or heavier at 60° Fah.	gal. 2,320,534	220,375	1,064,885	150,136
Gasoline, lighter than .8236 specific gravity at 60° Fah.	gal. 173,396,817	20,537,953	274,983,729	40,514,758
Natural casinghead, compression or absorption gasoline lighter than .6690 specific gravity (80. O A.P.I.) at 60° Fah. when imported by refiners of crude petroleum for blending with gasoline wholly produced in Canada.....	gal. 55,690,140	4,983,635	47,623,626	5,946,914
Lubricating oils, composed wholly or in part of petroleum and costing less than 25 cents per gallon.....	gal. 5,514,066	868,711	6,935,374	1,187,075
Lubricating oils, n.o.p.	gal. 8,135,796	3,931,026	9,240,999	4,444,874
Oils, mineral, n.o.p.	gal. 773,561	932,599	1,516,410	1,493,552
Imports of petroleum n.o.p., .8236 specific gravity (40. 3 A.P.I.) or heavier at 60° Fah.	gal. 373,737,127	25,026,180	335,447,326	32,309,045
Petroleum greases and lubricating greases, n.o.p.	lb. 11,107,547	929,659	10,157,242	892,459
Refined petroleum jellies and oils for toilet, medicinal, edible or similar purposes.....	—	624,382	—	555,720
Paraffin wax.....	lb. 40,514,083	3,405,007	43,580,756	3,464,046
Paraffin wax candles.....	lb. 211,456	48,583	11,786	2,749
Products of petroleum n.o.p., lighter than .8236 specific gravity at 60° Fah.	gal. 11,625,716	1,162,275	9,210,764	1,268,296
Liquefied petroleum gases.....	—	2,109,237	—	2,269,714
Petroleum tops; blends of petroleum tops or petroleum products with crude petroleum; all the foregoing .7249 specific gravity (63.7 A.P.I.) or heavier at 60° Fah. when imported by oil refiners to be refined.....	gal. 22,054,391	1,249,703	72,607,104	5,021,638

TABLE 242. Exports of Petroleum and Its Products, 1947 and 1948

Item	1947		1948	
	Quantity	Value	Quantity	Value
		\$		\$
Petroleum, crude.....	gal. 8,470	699	23,948	2,684
Oil, coal and kerosene, refined.....	gal. 93,983	20,939	336,073	61,203
Gasoline and naphtha.....	gal. 7,106,603	899,710	8,772,438	1,236,288
Fuel oil.....	gal. 27,126,829	2,009,085	63,590,873	4,841,459
Lubricating oil.....	gal. 3,012,268	851,861	917,004	348,731
Oil, mineral, n.o.p.	gal. 401,333	78,385	751,888	128,045
Wax, mineral.....	cwt. 434,849	2,963,754	326,779	2,685,514

CHAPTER EIGHT

THE NON-METALLIC MINING INDUSTRIES. (Other than Fuels)

Including detailed data relating to operations in the following industries:—

Asbestos	Miscellaneous	Magnesitic dolomite
Feldspar, Nepheline	Barite	Magnesium sulphate
Syenite and Quartz	Corundum	Mineral waters (natural)
Gypsum		Phosphate
Iron oxides (ochre)	Diatomite	Silica Brick
Mica	Fluorspar	Sodium carbonate
Peat fuel	Garnet	Sodium sulphate
Peat moss	Graphite	Strontium minerals
Salt	Grindstones, etc.	Sulphur (Pyrite)
Talc and soapstone	Lithium minerals	Volcanic dust

THE ASBESTOS MINING INDUSTRY

The asbestos industry recorded a new high in 1948 with production (shipments) of 716,769 tons valued at \$42,231,475, compared with 661,821 short tons worth \$33,005,748 in 1947. The province of Quebec is credited with the total production.

The 11 firms engaged in asbestos mining during 1948 employed 4,959 persons who received \$12,136,615 in salaries and wages. Fuel and electricity cost \$2,085,673, and process supplies, plus containers, cost \$5,771,229.

In 1948 the shipments of asbestos included 977 tons of crudes valued at \$594,594; 241,953 tons of milled fibres worth \$25,943,710 and 473,839 tons of shorts and refuse valued at \$15,693,171.

The asbestos produced in Canada is practically all of the chrysotile variety and comes almost entirely from areas of serpentinized rock in the Eastern Townships, Quebec, where the producing centres are Thetford Mines, Black Lake, East Broughton, Vimy Ridge, Asbestos and St. Remi de Tingwick. The Canadian deposits are the largest known in the world. Small deposits of Chrysotile asbestos are known in other parts of Quebec and also in Ontario and British Columbia, and several of them have been worked from time to time. No amosite or crocidolite has been found in Canada, but there are numerous deposits of fibrous tremolite, fibrous actinolite, and anthophyllite, which varieties are commercially termed amphibole asbestos. The fibres of these varieties are harsher and weaker than those of chrysotile and there is little demand for them at present. None of these deposits is being worked, although formerly fibrous actinolite was quarried near the village of Actinolite, Hastings County, Ontario, for use in the making of roofing materials. Asbestos deposits reported as having been found in recent years in Manitoba and in northern and western Ontario are of the amphibole varieties. The amphibole fibres are too harsh and brittle to be spun, but they have a higher resistance to acids than has chrysotile, and it is possible that material from some of the deposits is suitable for use in acid filters and for other purposes where long harsh fibres are required.

Production has been continuous from the Thetford area since 1878 and reserves of asbestos-bearing rock are huge. Core-drilling to depths greater than 1,700 feet has revealed the presence of fibre comparable in quantity and quality with that in the present workings. Most of the output consists of vein fibre obtained from veins $\frac{1}{4}$ and $\frac{1}{2}$ inch in width, though veins exceeding 5 inches in width occur. The fibres run crosswise of the vein and thus the width of the vein determines the length of fibre. Slip fibre, occurring in fault planes, is obtained largely in the East Broughton area.

The asbestos-bearing rock is mined in open pits and underground. The block-caving method of underground mining is coming into general use. This method was put into operation at the King mine of Asbestos Corporation in 1934. Johnson's Company is now using the same method, and Bell Asbestos Mines and Canadian Johns-Manville are sinking shafts preparatory to recovering rock by block-caving operations.

Price quotations of asbestos in December 1948, were: crude No. 1, \$960-\$1,050 per ton, crude No. 2, \$492-\$550; spinning fibres, \$232-\$475; shingle fibres, \$95.50-\$141; paper stock, \$78.50-\$88; waste, \$58; shorts, \$27-\$52.

Canadian Chrysotile Asbestos Classification — Standard Grades have been set up by the Committee on Uniform Classification and Grading of Asbestos Mines Products. This committee was formed in 1931 at the instigation of the Minister of Mines of the Province of Quebec, and the list of grades has been revised from time to time. The latest revision was in December 1942.

The asbestos mines products are divided into two classes: "Crude Asbestos" and "Milled Asbestos", respectively. "Crude Asbestos" consists of the hand-selected cross-vein material essentially in its native or unfiberized form. "Milled Asbestos" consists of all grades produced by mechanical treatment of asbestos ore.

Canadian asbestos fibres are graded within definite limits and production is controlled by means of the Quebec Standard Testing Machine, which has become the accepted measure of fibre length by which milled asbestos is sold. All grades except crudes, sand and gravels, are controlled by this standard. The machine consists of a nest of four rectangular cast-aluminum boxes clamped onto a table that is shaken by an eccentric. The bottom box serves as a pan and the three superimposed sieves have screens of successively larger meshes. From the top, down, the mesh sizes are: $\frac{1}{2}$ inch opening, 4-mesh and 10-mesh. All screens and dimensions are to exacting specifications.

To make a test, 16 ounces of asbestos is placed on the uppermost tray, which is then covered and tightly clamped. The machine is started and allowed to run at 328 r. p. m. for exactly 600 revolutions, when it is stopped by an automatic device. At the end of this time, the asbestos remaining on each sieve is weighed and the test is recorded to the nearest tenth of an ounce.

The Canadian classification of chrysotile asbestos specifies the minimum shipping test for each grade; i.e., the minimum number of ounces of fibre there shall be on each of the upper screens and the maximum there shall be in the pan. For convenience of designation, fibres have been divided into numbered groups and each group had been subdivided into grades, identified by letters of the alphabet. The grades and specifications are as follows:-

TABLE 243. Chrysotile Asbestos Classification

Crudes:					
Group No. 1	Crude No. 1	Consists basically of crude ¾ inch staple and longer			
Group No. 2	Crude No. 2	Consists basically of crude ¾ inch staple up to ¾ inch			
Crude run-of-mine		Consists basically of unsorted crudes			
Crudes, sundry		Consists of crudes other than above specified			
Fibres:					
	Standard designation of grades	Guaranteed Minimum shipping test			
		½-inch screen	No. of ounces on: 4 mesh screen	10-mesh screen	Pan
Group No. 3	3F	7	7	1.5	0.5
	3K	4	7	4	1
	3R	2	8	4	2
	3T	1	9	4	2
	3Z	0	8	6	2
Group No. 3	4H	0	5	8	3
	4K	0	4	9	3
	4M	0	4	8	4
	4R	0	3	9	4
	4T	0	2	10	4
	4Z	0	1.5	9.5	5
Group No. 4	5D	0	0.5	10.5	5
	5K	0	0	12	4
	5M	0	0	11	5
	5R	0	0	10	6
Group No. 6	6D	0	0	7	9
Group No. 7*.....	7D	0	0	5	11
	7F	0	0	4	12
	7H	0	0	3	13
	7K	0	0	2	14
	7M	0	0	1	15
	7R	0	0	0	16
	7T	0	0	0	16
Group No. 8	8S	Under 75 pounds per cubic foot loose measure.			
Group No. 9	9T	Over 75 pounds per cubic foot loose measure.			

* The affix "F" designates "Floats" in all subsections of Group No. 7.

TABLE 244. Principal Statistics of the Asbestos Mining Industry, 1946-1948

	1946	1947	1948
Number of firms	11	9	11
Number of employees:			
Administrative	465	488	528
Workmen	4,082	4,397	4,431
Total	4,547	4,885	4,959
Salaries and wages:			
Salaries	\$ 998,539	1,234,624	1,569,991
Wages	\$ 6,773,382	7,930,826	10,566,624
Total	\$ 7,771,921	9,165,450	12,136,615
Selling value of products ¹	\$ 25,245,579	33,015,965	42,278,721
Cost of purchased fuel and electricity	\$ 1,759,462	2,031,045	2,085,673
Cost of process supplies ²	\$ 1,670,496	2,650,382	3,068,607
Cost of containers	\$ 1,545,934	2,143,038	2,702,622
Net value of sales	\$ 20,269,687	26,191,500	34,421,819

1. Includes value of sand and gravel.
2. Explosives, drill steel, etc.

TABLE 245. Shipments of Asbestos by Canadian Mines, by Grades, 1946-1948

	1946		1947		1948	
	Tons	\$	Tons	\$	Tons	\$
Crudes.....	742	335,204	958	503,137	977	594,594
Fibres.....	228,234	17,181,400	222,196	20,221,444	241,953	25,943,710
Shorts.....	329,205 558,181	7,724,237 25,240,562	438,667 661,821	12,281,167 33,005,748	473,839 716,769	15,693,171 42,231,475
Sand, gravel and stone (waste rock only) ¹	6,337	5,017	9,610	10,217	44,165	47,246

1. This production is included under the Sand and Gravel Industry. Sand included with shorts in 1948.

TABLE 246. Shipments of Asbestos by Canadian Mines, 1939-1948

Year	Tons	Selling value at works	Year	Tons	Selling value at works
		\$			\$
1939.....	364,472	15,859,212	1944.....	419,265	20,619,516
1940.....	346,805	15,619,865	1945.....	466,896	22,805,157
1941.....	477,846	21,468,840	1946.....	558,181	25,240,562
1942.....	439,459	22,663,283	1947.....	661,821	33,005,748
1943.....	467,196	23,169,505	1948.....	716,769	42,231,475

TABLE 247. Tonnage of Asbestos Rock Mined and Milled, 1946-1948

	1946	1947	1948
	(Tons)		
Rock mined.....	9,127,859	9,837,045	10,759,016
Rock milled.....	7,027,483	7,740,828	7,894,461

TABLE 248. Shipments of Asbestos by Canadian Mines, by Months, 1948

Month	Short tons	Month	Short tons
January.....	46,633	August.....	64,185
February.....	50,127	September.....	68,424
March.....	62,524	October.....	66,264
April.....	61,590	November.....	67,426
May.....	60,681	December.....	58,459
June.....	53,975	Total.....	716,769
July.....	56,481		

TABLE 249. Number of Workmen, by Months, 1947 and 1948 (Administration and Office Employees Not Included)

Month	Mine			Mill	
	Surface		Underground	Male	Female
	Male	Female	Male		
1947					
January	1 830	33	463	1 874	2
February	1 842	32	431	1 865	2
March	1 860	32	430	1 877	2
April	1 886	32	474	1 874	2
May	1 914	33	490	1 894	2
June	1 949	33	509	1 876	2
July	1 987	33	526	1 915	2
August	1 952	26	581	1 903	2
September	1 955	27	560	1 925	2
October	1 985	25	630	1 961	2
November	1 986	32	616	1 987	2
December	1 905	31	611	1 966	2
Average	1 924	31	528	1 912	2
1948					
January	1 755	28	586	1 960	2
February	1 740	28	615	1 961	2
March	1 744	25	616	1 975	2
April	1 857	28	608	1 867	2
May	1 895	28	613	1 876	2
June	1 941	28	629	1 866	2
July	1 954	28	619	1 863	2
August	1 984	21	660	1 899	2
September	1 938	21	660	1 877	2
October	1 930	21	679	1 873	2
November	1 864	21	691	1 877	2
December	1 818	21	682	1 861	2
Average	1 870	25	638	1 896	2

TABLE 250. Taxes Paid by the Asbestos Mining Industry, 1947 and 1948

	1947	1948
	\$	\$
Dominion income tax, including tax on non-operating revenue.....	1,286,270	2,276,904
Dominion excess profits tax.....	1,008,476	294,707
Provincial taxes:		
Mining taxes paid on net profits from production, including portion paid to municipality.....	380,855	621,779
Corporation income tax where levied in addition to mining tax.....	1,111	3,802
Taxes paid on capital and places of business.....	13,596	27,781
Acreage taxes.....	218	1,313
Total Provincial.....	395,780	654,675
Municipal taxes:		
Based on property valuation.....	220,562	260,105
Grand total taxes paid.....	2,911,088	3,486,391

TABLE 251. Specified Miscellaneous Expenditures by the Asbestos Mining Industry, 1946-1948

	1946	1947	1948
	\$	\$	\$
Workmen's compensation.....	480,248	516,892	629,706
Unemployment insurance.....	55,237	61,206	72,611
Aggregate cost of all supplies purchased.....	4,557,899	5,537,967	4,403,735
Aggregate cost of plant and equipment purchased.....	2,279,382	1,528,018	2,214,179
Cost of buildings, machinery and equipment erected or installed during the year.....	2,635,758	2,529,932	3,936,471

TABLE 252. Imports and Exports of Asbestos and Asbestos Products, 1947 and 1948

	1947		1948	
	Tons	\$	Tons	\$
IMPORTS				
Asbestos clutch facings for automobiles, motor vehicles and chassis.....	—	244,205	—	218,202
Asbestos brake linings for automobiles, motor vehicles and chassis.....	—	584,530	—	649,896
Asbestos brake linings and clutch facings, n.o.p.	—	93,929	—	83,724
Asbestos in any form other than crude, and all manufactures of, n.o.p.	—	2,620,342	—	2,692,065
Asbestos packing	124	137,295	89	108,092
Total.....	—	3,680,301	—	3,751,979
EXPORTS				
Asbestos (crude).....	953	445,150	872	557,127
Asbestos milled fibres.....	223,693	20,275,533	237,077	25,552,254
Asbestos waste, refuse and shorts.....	412,250	11,570,606	452,493	15,289,675
Asbestos manufactures, including asbestos roofing	—	677,974	—	580,159
Total	—	32,969,263	—	41,979,215

THE FELDSPAR AND QUARTZ MINING INDUSTRY

Owing to the very close physical association of these minerals in many Canadian deposits (pegmatites), it has been found difficult for some operators to make a separation of all data pertaining to the mining of each individual mineral and, for this reason, the general statistics relating to employment, fuel and electricity, etc., have been combined in this report. Since 1936, corresponding statistics relating to the production of nepheline syenite have been included with those pertaining to the commercial production of feldspar and quartz.

Production in 1948, as measured by the sales of feldspar, nepheline syenite and quartz was valued at \$3,265,065. This exceeded the previously recorded high of \$2,641,857 in 1947.

Feldspar production came entirely from Ontario and Quebec; nepheline syenite came from Ontario only, and quartz (silica) in various forms was produced in Nova Scotia, Quebec, Ontario, Saskatchewan and British Columbia.

The industry employed 562 persons to whom \$1,184,257 was paid in salaries and wages. The cost of fuel, electricity, process supplies, containers and freight amounted to \$666,906 which if deducted from the gross output value, yields a net value of \$2,598,159 compared with \$1,921,871 in the preceding year.

TABLE 253. Principal Statistics of the Feldspar and Quartz Mining Industry¹, 1939-1948

Year	Number of shipping mines	Average number of employees	Total salaries and wages	Cost of purchased fuel and electricity at works	Cost of process supplies	Gross value of shipments f.o.b. works
			\$	\$	\$	\$
1939	38	338	330,170	79,114	99,607	1,352,671
1940	41	400	377,254	76,134	138,383	1,508,999
1941	35	506	610,489	91,165	159,818	1,838,054
1942	34	533	782,903	124,100	287,928	1,998,996
1943	34	535	768,199	134,247	322,605	2,138,229
1944	41	529	772,385	166,501	241,400	2,104,030
1945	27	483	767,517	180,799	220,873	2,093,880
1946	30	517	876,034	161,208	180,207	2,168,673
1947	31	593	1,134,107	221,166	376,570	2,641,857
1948	34	562	1,184,257	214,580	340,733	3,265,065

1. Includes nepheline syenite.

TABLE 254. Principal Statistics of the Feldspar and Quartz Mining Industry, by Provinces, 1947 and 1948

	Quebec		Other Provinces ^{2, 3}	
	1947	1948	1947	1948
Number of active firms ¹	21	18	18	18
Number of shipping mines	14	16	17	18
Number of employees:				
Administration	20	17	31	38
Workmen	241	236	301	271
Total	261	253	332	309
Salaries and wages:				
Salaries	\$ 52,955	40,958	85,300	116,794
Wages	\$ 421,742	452,181	574,110	574,324
Total	\$ 474,697	493,139	659,410	691,118
Selling value of products (gross)	\$ 1,060,517	1,342,977	1,407,372	1,922,088
Cost of fuel and purchased electricity	\$ 101,108	74,547	120,058	140,033
Cost of process supplies, freight and containers	\$ 77,714	53,578	298,856	287,155
Net value of sales	\$ 780,683	1,103,919	967,240	1,494,240

1. Small shippers whose production is recorded from consumers' returns are sometimes not included in the total.

2. Includes data relating to nepheline syenite.

3. Includes plants in Nova Scotia, Ontario, Saskatchewan, and British Columbia.

TABLE 255. Number of Workmen, by Months, 1948

Month	Quebec			Ontario				Canada Total ¹
	Surface	Underground	Mill	Surface		Underground	Mill	
	Male	Male	Male	Male	Female	Male	Male	
January	108	—	132	113	—	28	30	447
February	102	—	131	162	1	16	5	453
March	107	—	136	111	1	21	32	444
April	109	—	131	188	1	28	24	518
May	142	—	134	208	1	28	42	589
June	144	—	138	202	1	28	39	594
July	128	7	89	206	1	26	32	527
August	128	7	90	220	1	27	39	551
September	129	8	88	218	1	24	40	549
October	133	7	87	196	1	25	37	526
November	118	7	86	186	—	24	28	487
December	95	3	86	106	—	24	30	373
Average	122	3	111	177	1	25	31	507

1. Includes a few employees in Nova Scotia in some months.

feldspar

Production of feldspar, crude and ground, during 1948 was 54,851 tons valued at \$564,437 compared with 36,104 tons worth \$381,360 in 1947. The greater portion of the production came from deposits in Quebec.

Exports of feldspar from Canada totalled 31,467 tons worth \$223,945 and imports of ground and crude feldspar amounted to 207 tons at \$4,640.

The greater part of the production of feldspar is used in the pottery, glass, enamelware and other ceramic trades, and the remainder mainly in scouring soaps and cleansers, and for bonding of fired abrasive wheels and other shapes. Some coarsely crushed spar, usually made from impure waste or quarry fines, is sold for stucco dash, artificial stone, chicken grit, etc. Small tonnages of specially selected crude ("dental spar") are used in the manufacture of artificial teeth, and such material commands a large premium.

Most of the feldspar used is of the high-potash type, though some high-soda spar is used for blending purposes and in low-fired enamels and glazes. Practically all colours are equally acceptable for ceramic uses, but for cleanser purposes, pale shades of white to buff are demanded.

TABLE 256. Production of Feldspar, Crude and Ground, by Provinces, 1939-1948

Year	Quebec		Ontario		Manitoba	
	Tons	\$	Tons	\$	Tons	\$
1939	5,399	60,923	7,061	51,056	40	330
1940	8,548	89,004	12,907	98,619	-	-
1941	14,218	137,160	11,822	107,124	-	-
1942	16,802	164,588	5,468	49,353	-	-
1943	17,199	176,222	6,659	61,549	-	-
1944	17,842	177,271	5,867	50,361	-	-
1945	26,389	247,242	3,857	35,414	-	-
1946	29,758	330,981	5,485	53,696	-	-
1947	29,146	320,964	6,958	60,396	-	-
1948	42,800	464,926	12,051	99,511	-	-

TABLE 257. Consumption of Ground Feldspar, 1945-1948

	1945	1946	1947	1948
	(Tons)			
By Uses				
Glass	2,740	2,701	3,267	2,744
Scouring powders	4,847	4,099	4,058	3,817
Abrasives	60	15	23	42
Clay products (pottery, tile, insulators, etc.)	2,347	4,800	6,975	8,443
Enamelling	2,684	1,499	1,690	1,812
Miscellaneous	266	-	-	-
Total	12,944	13,114	16,013	16,861
By Provinces				
Quebec	6,815	6,886	7,289	6,846
Ontario	5,769	5,849	7,802	8,853
Alberta	360	379	920	1,162
Canada	12,944	13,114	16,011	16,861

TABLE 258. Imports and Exports of Feldspar, 1947 and 1948

	1947		1948	
	Tons	\$	Tons	\$
IMPORTS:				
Crude feldspar	5	126	11	309
Ground feldspar	316	7,821	196	4,331
EXPORTS:				
Feldspar	18,311	120,998	31,467	223,945

NEPHELINE SYENITE

Production of nepheline syenite in Canada during 1948 was limited to one firm, The American Nepheline Corporation Ltd., at Lakefield, Ontario. Shipments were valued at \$506,462 compared with \$341,635 in 1947. The exports of nepheline syenite were 61,107 tons valued at \$327,518 compared with 52,198 tons worth \$188,352 in the preceding year.

Nepheline syenite is a quartz-free rock consisting essentially of nephelite and albite and of microcline feldspar. It usually contains small amounts of iron-bearing impurities, chiefly magnetite hematite and biotite mica as well as such minor accessory minerals as sodalite, cancrinite, corundum zircon, muscovite mica, calcite, etc. In the developed Canadian deposits, iron-bearing impurities are of coarse sizes and can be readily removed from the crude rock by magnetic means. Other objectionable minerals, notably corundum and muscovite, can be extracted by flotation methods, with the recovery of commercial grades of such products. Nepheline syenite is relatively high in alumina (24 per cent in average Canadian commercial rock) compared with straight feldspar (17 to 20 per cent), and for this reason it is used as a feldspar substitute in a number of ceramic industries, more especially in the glass trade.

TABLE 259. Production¹ of Nepheline Syenite, 1939-1948

Year	Value	Year	Value
	\$		\$
1939.....	140,148	1944.....	217,989
1940.....	117,849	1945.....	275,766
1941.....	227,583	1946.....	229,198
1942.....	246,893	1947.....	341,635
1943.....	292,010	1948.....	506,462

1. Only one or two producers in recent years; quantity not available for publication.

TABLE 260. Consumption of Ground Nepheline Syenite, 1945-1948

	1945	1946	1947	1948
	(Tons)			
By Uses				
Glass.....	7,778	5,584	9,122	10,916
Pottery.....	324	219	205	518
Total.....	8,102	5,803	9,327	11,434
By PROVINCES				
Quebec.....	1,570	1,192	1,972	2,031
Ontario.....	4,991	3,973	5,987	7,734
Alberta.....	1,541	638	1,368	1,669
Total.....	8,102	5,803	9,327	11,434

QUARTZ (SILICA)

Production of quartz or siliceous material during the year under review was 2,017,262 tons valued at \$2,082,573 compared with 1,836,428 tons worth \$1,796,612 in 1947.

Output included crude and crushed dyke quartz, quartzite, sandstone and natural silica sands and gravels. The mineral in one or more of the forms thus defined was produced during 1946 in Nova Scotia, Quebec, Ontario and Saskatchewan. Shipments of silica in Nova Scotia were made to steel plants largely for the making of silica brick. In Quebec, high-grade silica sands were produced for the manufacture of glass

and chemicals while a considerable tonnage of these same sands was sold for sand-blasting, moulding and various other purposes; in the same province relatively large quantities of crushed quartzite were mined and milled for the manufacture of silicon carbide and other products. The greater part of the tonnage of silica shipped in Ontario during 1946 represented material intended for use in the production of silica brick, cement and ferro-silicon and for the fluxing of nickel-copper ores. Quartz production as recorded for Saskatchewan represented low-grade natural silica sands or gravels shipped as flux to the Flin Flon smelter of the Hudson Bay Mining and Smelting Co. Ltd.

TABLE 261. Production¹ of Quartz (Silica), 1939-1948

Year	Tons	\$	Year	Tons	\$
1939.....	1,582,935	1,100,214	1944.....	1,740,262	1,658,409
1940.....	1,858,302	1,203,527	1945.....	1,513,628	1,535,458
1941.....	2,052,878	1,366,187	1946.....	1,413,378	1,554,798
1942.....	1,738,174	1,538,162	1947.....	1,836,428	1,796,612
1943.....	1,776,749	1,608,448	1948.....	2,017,262	2,082,573

1. Complete data for production of this material in Ontario previous to 1936 are not available.

TABLE 262. Production of Quartz, by Provinces, 1947 and 1948

	1947		1948	
	Tons	Value	Tons	Value
		\$		\$
PRODUCTION (shipments) ¹				
Nova Scotia.....	9,146	55,393	7,651	52,863
Quebec.....	226,050	638,521	331,055	767,118
Ontario.....	1,442,341	949,210	1,496,652	1,019,997
Saskatchewan.....	124,322	43,513	151,676	53,086
British Columbia.....	34,569	109,975	30,228	189,509
Canada.....	1,836,428	1,796,612	2,017,262	2,082,573

1. Includes both crude and crushed quartz, crushed sandstone and quartzite, and natural silica sands.

TABLE 263. Production¹ of Natural Low-Grade Silica Sand and Silica Gravel as Non-Ferrous Smelter Flux, 1946-1948

	1946		1947		1948	
	Tons	\$	Tons	\$	Tons	\$
Ontario.....	461,122	161,392	714,588	98,562	737,619	95,157
Saskatchewan.....	130,105	47,542	124,332	43,513	151,676	53,086
Canada.....	591,227	208,934	838,920	142,075	889,295	148,243

1. Included in totals shown in Tables 261 and 262.

TABLE 264. Imports and Exports of Silica, 1947 and 1948

	1947		1948	
	Quantity	\$	Quantity	\$
	Tons		Tons	
IMPORTS:				
Ground flint stone.....	335	12,739	739	25,749
Ganister.....	400	3,211	230	1,312
Silica sand for manufacturing.....	533,456	1,148,397	584,019	1,446,624
Silex or crystallized quartz.....	15,004	164,826	17,473	168,827
Silica fire brick.....	-	988,029	-	1,211,511
EXPORTS:				
Quartzite.....	223,240	489,129	228,100	494,284

TABLE 265. Available Statistics on the Consumption of Silica Sand and Ground Quartz

	1945	1946	1947
	(Tons of 2,000 pounds)		
By INDUSTRIES			
Paints, pigments and varnishes.....	1,904	1,959	1,886
Soaps and cleaning compounds.....	4,350	5,256	4,396
Clay products.....	3,659	4,554	5,861
Asbestos products.....	2,679	4,354	87
Miscellaneous non-metallic minerals.....	6,617	5,147	6,260
Roofing paper.....	885	1,193	1,710
Glass.....	135,959	123,910	172,859
Artificial abrasives.....	74,406	83,910	90,716
Fertilizers.....	25,871	44,077	69,669
Iron castings.....	4,331	3,764	4,603
Cooking and heating apparatus.....	2,149	2,048	2,111
Boilers, tanks and plate work.....	117	116	65
Farm implements.....	51	28	1,324
Railway rolling stock.....	3,353	1,454	1,763
Matches.....	384	356	471
Sweeping compounds.....	3	3	63
Disinfectants.....	1	9	12
Primary iron and steel.....	85,078	61,220	51,986
Heavy chemicals.....	16,943	19,305	30,152
Miscellaneous chemicals.....	126	151	166
Stone products.....	820	1,464	549
Machinery.....	1,134	1,544	1,324
Electrical apparatus.....	-	350	550
Cement manufacturing.....	29,424	31,222	36,223
Cement products.....	-	-	701
Miscellaneous iron and steel.....	-	-	33
Polishes.....	-	4	-
Total.....	401,244	397,398	485,540
By PROVINCES			
Nova Scotia.....	2,001	2,659	6,124
New Brunswick.....	8,126	20,356	27,694
Quebec.....	192,481	193,504	227,896
Ontario.....	159,054	139,898	172,907
Manitoba.....	16,939	19,717	24,606
Saskatchewan.....	41	368	23
Alberta.....	17,235	16,572	22,298
British Columbia.....	5,366	4,324	3,992
Canada.....	401,244	397,398	485,540

THE GYPSUM INDUSTRY

(1) Primary Production — The Gypsum Mining and Quarrying Industry

Producers' shipments of gypsum during 1948 totalled 3,216,809 tons valued at \$5,548,245 compared with 2,496,984 tons valued at \$4,734,853 in the preceding year. Output consisted of various grades of crude gypsum and crude anhydrite as shipped from the quarries or mines, together with the calcined gypsum used in or shipped from the primary plants.

The quantity of crude mineral mined or quarried in 1948 included 3,436,075 tons of gypsum and 51,889 tons of anhydrite. The primary plants calcined 430,581 tons of crude gypsum during the year.

The gypsum mining industry operated 14 quarries or mines in 1948 and paid to 995 employees a total of \$2,272,358 in wages and salaries. The cost of fuel, electricity, process supplies and containers amounted to \$1,871,868 and the net value of production was \$3,771,013.

Exports in 1948 included 2,617,271 tons of crude gypsum valued at \$2,702,870; 742 tons of plaster of Paris or wall plaster worth \$18,852; and 10,794 tons of ground gypsum valued at \$16,741. Imported to Canada were 1,031 tons of gypsum worth \$21,577 and 9,953 tons of plaster of Paris and wall plaster valued at \$201,806.

Some of the Canadian gypsum mining companies restrict their operations in the Dominion to the production and sale of crude gypsum or anhydrite while others, in addition to marketing various grades of crude gypsum, produce a calcine for sale or for consumption in their own manufacturing plants in making wallboard, wall plaster, etc.

TABLE 266. Principal Statistics for the Gypsum Mining Industry, 1939-1948

Year	Number of firms	Number of plants	Average number of employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies	Gross selling value of products including containers
				\$	\$	\$	\$
1939	10	17	714	692,158	193,488	105,831	1,935,127
1940	9	16	694	717,666	194,964	223,375	2,065,933
1941	8	15	648	745,008	222,564	229,444	2,248,428
1942	7	13	510	657,620	178,682	65,457	1,254,182
1943	6	12	438	617,780	201,980	46,063	1,381,468
1944	8	12	328	490,872	148,743	239,198	1,511,978
1945	7	12	434	647,287	184,619	391,026	1,783,290
1946	8	14	753	1,246,673	260,479	520,868	3,696,727
1947	8	13	908	1,695,711	364,115	638,630	4,782,429
1948	9	14	995	2,272,358	481,392	1,295,840	5,642,881

TABLE 267. Production¹ of Gypsum, 1947 and 1948

	1947		1948	
	Quantity	Value	Quantity	Value
	tons	\$	tons	\$
Shipments by grades:				
Crude:				
Lump or mine run ²	75,861	138,367	31,678	65,196
Crushed ²	2,120,645	2,321,669	2,831,106	3,179,596
Fine ground.....	561	5,618	1,482	10,450
Calcined gypsum, sold and used ³	299,917	2,269,199	352,543	2,293,003
Total.....	2,496,984	4,734,853	3,216,809	5,548,245
Shipments by provinces:				
Nova Scotia.....	2,137,704	2,303,275	2,795,848	3,028,646
New Brunswick.....	65,939	711,535	61,534	338,405
Ontario.....	155,249	671,548	182,303	770,004
Manitoba.....	79,356	525,197	94,698	836,483
British Columbia.....	58,736	523,298	82,426	574,707
Total.....	2,496,984	4,734,853	3,216,809	5,548,245
Total gypsum mined and quarried ²	2,604,075	-	3,487,964	-
Total gypsum calcined ³	383,072	-	430,581	-

1. "Production" means producers' shipments of crude gypsum plus calcined gypsum shipped or used at mine.

2. Includes some anhydrite quarried in Nova Scotia.

3. Does not include gypsum calcined in manufacturing plants located in Montreal and Calgary, but includes calcine used in manufacturing plants operated in direct or close conjunction with the mines; the value of calcine used is its value as a process material.

TABLE 268. Production of Crude and Calcined Gypsum, 1934-1948

Year	Tons	Value	Year	Tons	Value
		\$			\$
1934.....	461,237	863,776	1942.....	566,166	1,254,182
1935.....	541,864	932,203	1943.....	466,848	1,381,468
1936.....	833,822	1,278,971	1944.....	596,164	1,511,978
1937.....	1,047,187	1,540,483	1945.....	837,781	1,783,290
1938.....	1,008,799	1,502,265	1946.....	1,810,937	3,671,503
1939.....	1,421,934	1,935,127	1947.....	2,496,984	4,734,853
1940.....	1,448,788	2,065,933	1948.....	3,216,809	5,548,245
1941.....	1,593,406	2,248,428			

TABLE 269. Production of Crude and Calcined Gypsum, by Months, 1947 and 1948

Month	1947	1948	Month	1947	1948
	(tons)			(tons)	
January.....	92,020	141,562	July.....	321,286	476,320
February.....	78,887	40,915	August.....	327,882	387,120
March.....	102,089	82,875	September.....	400,212	347,081
April.....	86,491	226,976	October.....	261,109	415,110
May.....	154,877	275,161	November.....	237,634	292,209
June.....	265,429	356,490	December.....	169,068	174,990
			Total.....	2,496,984	3,216,809

TABLE 270. Imports and Exports of Gypsum, 1947 and 1948

	1947		1948	
	Quantity	Value	Quantity	Value
	tons	\$	tons	\$
Imports:				
Gypsum, crude, and gypsum ground, not calcined.....	8,875	75,856	1,031	21,577
Plaster of Paris and wall plaster.....	10,071	173,762	9,953	201,806
Total.....	-	249,618	-	223,383
Exports:				
Gypsum, crude.....	1,936,990	2,043,055	2,617,271	2,702,870
Plaster of Paris, wall plaster.....	1,423	29,364	742	18,852
Gypsum, ground.....	-	-	10,794	16,741
Total.....	-	2,072,419	-	2,738,463

TABLE 271. Consumption of Gypsum in the Portland Cement Industry, 1939-1948

Year	Tons	Year	Tons
1939	31,492	1944	42,672
1940	38,903	1945	45,883
1941	49,031	1946	65,431
1942	49,816	1947	81,946
1943	47,034	1948	119,821

TABLE 272. Consumption of Gypsum in the Gypsum Products Industry, 1939-1948

Year	Crude	Calcined	Year	Crude	Calcined
	(tons)			(tons)	
1939	19,946	105,397	1944	26,683	165,750
1940	21,611	125,917	1945	10,147	194,351
1941	30,978	157,488	1946	46,617	253,617
1942	20,742	149,885	1947	52,183	298,950
1943	17,489	162,273	1948	61,991	362,555

TABLE 273. Employees, Salaries and Wages, by Provinces, 1947 and 1948

Province	Average number of employees					Salaries	Wages	Total salaries and wages
	On salaries		On wages		Total			
	Male	Female	Male	Female				
						\$	\$	\$
1947								
Nova Scotia	21	6	521	3	551	71,179	932,766	1,003,945
Other provinces.....	14	3	340	—	357	39,290	652,476	691,766
Canada.....	35	9	861	3	908	110,469	1,585,242	1,695,711
1948								
Nova Scotia	30	5	592	1	628	117,780	1,305,948	1,423,728
Other provinces	11	4	352	—	367	34,219	814,411	848,630
Canada	41	9	944	1	995	151,999	2,120,359	2,272,358

TABLE 274. Number of Wage-Earners on Payroll or Time Record on the Last Day of Each Month, 1947 and 1948

Month	1947					1948				
	Mine			Mill		Mine		Mill		
	Surface		Underground	Male	Female	Surface	Underground	Male	Female	
	Male	Female				Male				
January	286	2	141	212	1	306	181	237	1	1
February	283	2	141	211	1	262	187	217	1	1
March	314	2	142	242	1	340	184	263	1	1
April	348	2	144	266	1	406	178	229	1	1
May	428	2	139	344	1	491	177	376	1	1
June	447	2	145	352	1	504	172	387	1	1
July	442	2	151	400	2	525	162	370	1	1
August	463	2	141	400	2	531	164	401	1	1
September	467	2	155	418	2	547	168	413	1	1
October	457	2	157	377	1	581	190	393	1	1
November	396	2	163	350	1	521	196	259	1	1
December	345	2	171	271	1	505	201	160	1	1
Average	389	2	151	321	1	461	179	304	1	1

PART II – SECONDARY PRODUCTION – THE GYPSUM PRODUCTS INDUSTRY

Ten Canadian factories, operated by 4 companies, manufactured gypsum products having a factory selling value of \$14,186,714 during 1948. This output was 22 per cent over the 1947 total of \$11,026,829. The main products were gypsum wallboard, gypsum hardwall plaster, gypsum lath, gypsum tile and gypsum blocks.

The average number of employees in these works in 1948 was 951, who were paid \$1,976,533 in salaries and wages. Expenditures for fuel and electricity amounted to \$644,094 and materials used in manufacturing processes cost \$7,055,419.

TABLE 275. Principal Statistics of the Gypsum Products Industry, 1947 and 1948

	1947	1948
Number of establishments	10	10
Number of employees	905	951
Salaries and wages	\$ 1,588,298	1,976,533
Cost of fuel and electricity	\$ 496,638	644,094
Cost of materials at works	\$ 5,503,676	7,055,419
Selling value of products at works	\$ 11,026,829	14,186,714

Note. Profits or losses cannot be calculated from above figures as data are not available for general expense items, such as interest, rent, depreciation, taxes, insurance, advertising, etc.

TABLE 276. Employees, Salaries and Wages, 1947 and 1948

	1947	1948
Employees:		
On salaries..... Male	No. 66	67
Female.....	No. 14	7
On wages..... Male	No. 792	849
Female.....	No. 33	28
Total Employees.....	No. 905	951
Salaries	\$ 216,046	207,387
Wages.....	\$ 1,372,252	1,769,146
Total Salaries and Wages.....	\$ 1,588,298	1,976,533

TABLE 277. Output of the Gypsum Products Industry, 1947 and 1948

Product	Unit of measure	1947		1948	
		Quantity	Selling value at works	Quantity	Selling value at works
			\$		\$
Gypsum wallboard	sq. ft.	213,701,430	6,210,912	237,700,167	7,213,425
Gypsum lath.....	sq. ft.	111,092,387	2,282,892	153,008,355	3,667,540
Gypsum hard wall plasters	ton	119,669	1,725,473	137,139	2,125,047
Other gypsum plasters.....	ton	17,278	360,122	22,114	513,248
All other products ¹ .....	...	-	447,430	-	667,454
Total.....	...	-	11,026,829	-	14,186,714

1. Includes gypsum tile and blocks, etc.

TABLE 278. Materials Used in the Gypsum Products Industry, 1947 and 1948

Material	1947		1948	
	Quantity	Cost at works	Quantity	Cost at works
	tons	\$	tons	\$
Gypsum, crude.....	52,183	225,419	61,991	329,733
Gypsum, calcined (plaster of Paris).....	298,950	1,981,722	362,555	2,310,681
Paper.....	26,233	2,424,047	32,385	3,208,017
Starch or paste.....	1,980	165,767	1,628	237,100
Hair.....	110	36,527	133	46,798
Retarder.....	543	66,405	605	80,339
Sawdust and shavings.....	-	4,561	-	6,035
Containers, etc.....	-	287,673	-	369,419
All other materials.....	-	311,555	-	467,297
Total	-	5,503,676	-	7,055,419

THE PEAT INDUSTRY

Production (shipments) of peat moss during 1948 amounted to 89,800 tons valued at \$2,767,878 (excluding the value of containers), compared with an output of 80,019 tons worth \$2,279,821 in 1947. In addition to the above, the production of peat fuel was 85 tons valued at \$850.

The greater portion of the Canadian production of peat moss was exported to the United States. Exports in 1948 amounted to 77,924 tons valued at \$2,946,923.

During 1948 peat was produced by 39 firms, of which 14 were in Quebec, 16 in British Columbia, 5 in Ontario, 3 in New Brunswick and 1 in Manitoba.

The 1,032 persons employed received \$1,532,977 in salaries and wages. The cost of fuel and electricity was \$111,677, and the value of containers and packing materials amounted to \$639,097.

Peat is the material produced by the incomplete decomposition of vegetable matter either in water or in the presence of water under such conditions that atmospheric oxygen is excluded. The character of the peat depends upon conditions under which it was formed and upon the nature of the vegetation that contributed to its formation. Many species of plants are found in peat bogs, the most abundant being: mosses, such as sphagnum and hypnum; marsh and heath plants; grasses, rushes, etc.; marine plants; and sometimes trunks, roots, and leaves of trees. Peat occurs in nature in two distinct forms, unhumified and humified, which differ markedly in physical properties and in chemical composition. Unhumified peat is the dead moss of the sphagnum plant, only slightly humified. It is fibrous, elastic, of light greyish green, or yellowish to light brown colour, becoming somewhat darker on drying. It has an absorptive value of up to twenty-five times its own weight. It is used as a bedding litter for animals, for horticultural purposes, and as a filler for fertilizers. Because of its elasticity and low heat conductivity, it is used for insulating and sound-proofing and as a packing material.

Humified or fuel peat in its natural state is dark brown to black, colloidal, plastic, homogeneous, and somewhat elastic. It dries into a hard solid mass of a specific gravity higher than water. It has almost no absorptive value. Peat moss left in its natural state will humify in course of time and all fibrous matter eventually disappears.

TABLE 279. Principal Statistics of the Peat Industry, 1947 and 1948

	1947	1948
Number of firms.....	41	41
Number of plants or bogs.....	41	41
Number of employees:		
On salary.....	66	75
On wages.....	1,158	957
Total.....	1,224	1,032
Salaries and wages:		
Salaries..... \$	157,340	180,004
Wages..... \$	1,444,925	1,352,973
Total..... \$	1,602,265	1,532,977
Selling value of products (gross)..... \$	2,808,639	3,407,825
Cost of fuel and electricity..... \$	91,450	111,677
Process supplies used..... \$	52,826	59,297
Cost of containers and packing materials..... \$	527,868	639,097
Selling value of products (net)..... \$	2,136,495	2,597,754

TABLE 280. Principal Statistics, by Provinces, 1947 and 1948

Province	Number of firms	Number of employees	Salaries and wages	Cost of fuel, electricity, process supplies and containers	Production		
					Tons of peat sold or used		Gross selling value f.o.b. works ¹
					As fuel	Moss	
			\$	\$			\$
1947							
Quebec.....	18	310	312,876	190,420	—	21,293	549,411
Ontario.....	5	105	133,074	55,990	95	8,250	221,850
Manitoba and New Brunswick.....	3	84	106,244	88,406	—	4,372	176,744
British Columbia.....	15	725	1,050,071	337,328	—	46,104	1,860,634
Canada.....	41	1,224	1,602,265	672,144	95	80,019	2,808,639
1948							
Quebec.....	16	347	383,418	234,500	—	24,622	640,133
Ontario.....	5	120	167,133	56,081	85	7,261	239,247
Manitoba and New Brunswick.....	4	152	157,293	117,340	—	6,421	274,907
British Columbia.....	16	413	825,133	402,150	—	51,496	2,253,538
Canada.....	41	1,032	1,532,977	810,071	85	89,800	3,407,825

1. Includes cost of containers.

TABLE 281. Production (Shipments) of Peat Fuel and Peat Moss, by Uses and Provinces, 1947 and 1948

Province	Peat Fuel		Peat Moss									
	Tons	\$	Horticulture		Insulation		Poultry and stable litter		Other uses		Total Moss	
			Tons	\$	Tons	\$	Tons	\$	Tons	\$	Tons	\$ ¹
1947												
Quebec.....	—	—	11,884	205,676	393	9,263	8,959	163,526	57	5,330	21,293	383,795
Ontario.....	95	950	6,206	114,468	—	—	2,044	55,955	—	—	8,250	170,443
Manitoba and New Brunswick.....	—	—	1,293	33,095	2	59	3,039	103,405	38	675	4,372	137,234
British Columbia.....	—	—	21,613	781,632	—	—	24,491	806,717	—	—	46,104	1,588,349
Total.....	95	950	40,996	1,134,891	395	9,322	38,533	1,129,603	95	6,005	80,019	2,279,821
1948												
Quebec.....	—	—	16,021	289,502	61	1,932	8,540	142,691	—	—	24,622	434,125
Ontario.....	85	850	4,604	93,289	—	—	2,657	91,158	—	—	7,261	189,447
Manitoba and New Brunswick.....	—	—	2,832	86,887	—	—	3,589	128,768	—	—	6,421	215,655
British Columbia.....	—	—	32,452	1,196,583	8	750	19,036	731,318	—	—	51,496	1,928,651
Total.....	85	850	55,909	1,671,261	69	2,682	33,822	1,093,935	—	—	89,800	2,767,878

1. Does not include cost of containers which were valued at \$527,868 in 1947 and \$639,097 in 1948.

TABLE 282. Production of Peat Fuel, 1941-1948

Year	Tons	\$
1941.....	355	2,155
1942.....	172	1,204
1943.....	782	7,000
1944.....	644	5,397
1945.....	118	1,062
1946.....	145	1,305
1947.....	95	950
1948.....	85	850

TABLE 283. Production of Peat Moss, 1941-1948

Year	Tons	Value
		\$
1941.....	14,345	390,509
1942.....	28,520	658,771
1943.....	64,360	1,461,422
1944.....	80,446	1,869,553
1945.....	83,963	2,011,139
1946.....	96,839	2,395,649
1947.....	80,019	2,279,821
1948.....	89,800	2,767,878

TABLE 284. Exports of Peat Moss, 1944-1948

Year	Tons	Value
		\$
1944.....	63,944	2,105,370
1945.....	76,409	2,625,514
1946.....	81,940	2,892,563
1947.....	72,918	2,634,003
1948.....	77,924	2,946,923

Note. The weight of peat moss shipped varies greatly depending on the moisture content. Weight is used as a unit of measure of production (shipments owing to the fact that Canadian moss is shipped in various forms, including bales, bags, pads, etc., and at present there is no general standardization in Canada as to size of these products.

TABLE 285. Workmen, by Months, 1947 and 1948

Month	1947 Total	1948				
		Bog		Dressing Plant		Total
		Male	Female	Male	Female	
January.....	729	276	3	390	12	681
February.....	900	274	3	375	14	666
March.....	842	265	8	391	8	672
April.....	829	349	23	387	18	777
May.....	963	620	34	277	16	947
June.....	1,896	1,181	137	317	14	1,649
July.....	2,077	1,187	130	312	8	1,637
August.....	1,861	1,025	104	276	7	1,412
September.....	1,151	752	61	258	20	1,091
October.....	1,044	494	14	281	23	812
November.....	805	290	2	368	21	681
December.....	670	113	—	308	16	437
Average.....	1,158	563	43	334	17	957

THE SALT INDUSTRY

During 1948 the producers' sales of common salt or natural sodium chlorides in Canada amounted to 741,261 short tons valued at \$4,836,028 compared with 728,545 tons valued at \$4,436,930 in 1947. Ontario produced 83.6 per cent of the total tonnage, Nova Scotia produced 8.3 per cent and the remainder was produced by wells in Alberta and Manitoba.

About 50 per cent of the output, or 370,701 tons, was used in the producers' own plants for the manufacture of caustic soda, soda ash and other chemicals. The sales of salt included 282,711 tons of fine vacuum grade; 19,419 tons of coarse grainer and 25,908 tons of rock salt and 42,522 tons recovered in chemical operations.

Eleven plants were in operation in 1948. The Alberta Salt Co. Ltd., commenced production in June at Lindbergh, Alberta. The Prairie Salt Co. Ltd. are constructing a plant at Unity, Saskatchewan, which is expected to be in production in 1949. The salt industry employed 673 persons to whom \$1,367,353 were paid in salaries and wages. Fuel and electricity cost \$822,066 and process supplies cost \$248,177. The containers used were valued at \$992,439.

Exports of salt from Canada amounted to 5,630 tons valued at \$127,104 in 1948; the imports were 186,071 tons worth \$1,078,830; the apparent consumption was 921,702 short tons valued at \$5,787,754.

TABLE 286. Principal Statistics for the Salt Industry, 1939-1948

Year	Establishments	Employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies and containers	Gross value of products sold during year, including containers (f.o.b. works)
	No.	No.	\$	\$	\$	\$
1939	9	547	741,736	276,267	508,511	2,957,982
1940	9	586	836,506	321,589	539,179	3,322,250
1941	9	668	1,018,652	450,291	725,675	3,852,499
1942	9	675	1,114,574	536,649	882,599	4,593,003
1943	9	682	1,223,009	596,252	943,522	5,188,628
1944	9	710	1,302,143	652,126	846,298	4,786,084
1945	9	724	1,260,769	670,187	953,054	4,864,697
1946	9	713	918,566	597,112	993,304	4,480,839
1947	10	700	1,399,693	771,916	1,100,923	5,366,032
1948	11	673	1,367,353	822,066	1,240,616	5,828,467

TABLE 287. Production of Salt, by Grades, 1948

	Manufactured	Sold	Value of salt sold (not including containers)
	tons	tons	\$
Fine vacuum salt	275,264	282,711	3,464,190
Coarse grainer salt	19,820	19,419	376,277
Mined rock salt	28,824	25,908	266,285
Salt recovered in chemical operations	42,200	42,522	186,278
Salt used or shipped to producers' own chemical works for the manufacture of chemicals (not elsewhere specified)	90,456	90,404	257,925
Total Salt	456,364	460,964	4,530,955
Salt content of brines used and shipped	280,297	280,297	285,073
Total salt and salt content of brine	736,661	741,261	4,836,028
Value of containers	-	-	992,439
Total Value including containers	-	-	5,828,467

TABLE 288. Production of Salt, by Provinces, 1939-1948

Year	Nova Scotia		Ontario		Manitoba		Alberta	
	Tons	\$	Tons	\$	Tons	\$	Tons	\$
1939.....	47,885	213,029	370,843	2,200,189	2,453	35,888	3,319	37,526
1940.....	42,495	220,328	412,401	2,371,780	3,076	45,731	6,742	185,430
1941.....	54,007	307,637	477,170	2,512,166	13,051	115,367	16,617	260,995
1942.....	50,199	317,798	558,407	2,793,328	22,706	397,101	22,360	335,960
1943.....	47,775	245,157	594,889	3,356,870	27,523	497,227	17,499	280,124
1944.....	38,809	281,482	603,806	2,906,117	27,267	488,776	25,335	397,646
1945.....	37,825	254,138	578,697	2,920,973	27,133	449,561	28,421	430,048
1946.....	38,371	329,579	441,679	2,408,279	26,166	446,472	31,769	441,835
1947.....	40,107	416,332	633,766	3,132,165	24,974	449,608	29,698	438,825
1948.....	61,799	700,164	619,598	3,265,654	25,251	420,430	34,613	449,780

Note: Production = producers' sales.

TABLE 289. Total Production of Salt, 1939-1948

Year	Tons	\$	Year	Tons	\$
1939.....	424,500	2,486,632	1944.....	695,217	4,074,021
1940.....	464,714	2,823,269	1945.....	673,076	4,054,720
1941.....	560,845	3,196,165	1946.....	537,985	3,626,165
1942.....	653,672	3,844,187	1947.....	728,545	4,436,930
1943.....	687,686	4,379,378	1948.....	741,261	4,836,028

TABLE 290. Salt Produced for Chemical Purposes¹, 1939-1948

Year	Quantity tons	Per cent of total salt output	Year	Quantity tons	Per cent of total salt output
1939.....	187,958	44	1944.....	370,199	53
1940.....	224,009	48	1945.....	348,488	52
1941.....	258,711	46	1946.....	247,911	46
1942.....	327,548	50	1947.....	401,491	55
1943.....	346,145	50	1948.....	370,701	50

1. Used in the manufacture of chemicals by producers of salt.

TABLE 291. Production, Imports, Exports and Consumption of Salt, 1947 and 1948

	1947		1948	
	Tons	Value	Tons	Value
		\$		\$
Production.....	728,545	4,436,930	741,261	4,836,028
Imports:				
Table salt.....	40	643	—	—
Salt, for the use of fisheries.....	51,142	348,294	29,312	179,805
Salt, in bulk, n.o.p.....	147,393	709,847	138,527	688,116
Salt, n.o.p., in bags, barrels, etc.....	21,303	187,767	18,232	210,909
Total imports.....	219,878	1,246,551	186,071	1,078,830
Exports.....	11,212	243,663	5,630	127,104
Apparent Consumption.....	937,211	5,439,818	921,702	5,787,754

TABLE 292. Employees, Salaries and Wages in the Salt Industry, 1944-1948

Year	Number of employees					Salaries	Wages	Total salaries and wages
	On salaries		On wages		Total employees			
	Male	Female	Male	Female				
						\$	\$	\$
1944.....	87	59	504	60	710	397,113	905,030	1,302,143
1945.....	93	54	517	60	724	367,132	893,637	1,260,769
	Administration		Workmen			Earnings Administration Workmen		
1946.....	43	26	577	67	726	207,532	711,034	918,566
1947.....	44	18	582	56	700	239,576	1,160,117	1,399,693
1948.....	63	19	546	45	673	198,349	1,169,004	1,367,353

TABLE 293. Number of Workmen in the Salt Industry, by Months, 1947 and 1948

Month	1947			1948		
	Number		Total	Number		Total
	Male	Female		Male	Female	
January.....	574	67	641	521	47	568
February.....	570	62	632	516	46	562
March.....	596	57	653	543	44	587
April.....	624	57	681	542	48	590
May.....	622	52	674	546	43	589
June.....	626	45	671	550	34	584
July.....	610	53	663	607	35	642
August.....	557	54	611	609	49	658
September.....	538	66	604	577	48	625
October.....	569	71	640	568	46	616
November.....	586	57	643	541	44	585
December.....	521	38	559	529	41	570
Average.....	582	56	582	546	45	591

THE TALC AND SOAPSTONE INDUSTRY

Canadian producers of talc and soapstone shipped 28,780 tons valued at \$309,823 during 1948. Operators in Quebec, all in the Eastern Townships, shipped 14,479 tons of blocks and ground material worth \$145,361 and shipments from Ontario totalled 14,301 tons valued at \$164,462; the latter tonnage was mostly high-grade milled talc. The 5 concerns in this industry employed an average of 58 persons during the year.

Canadian consumers imported 7,798 tons of talc or soapstone valued at \$213,438 in 1948. Exports totalled 5,052 tons worth \$63,474.

Ground talc, including soapstone and pyrophyllite, is used chiefly in the paint, roofing, paper, rubber, insecticide, and ceramic industries. It is used also in foundry facings, bleaching fillers for textiles, cosmetics and pharmaceuticals, soaps and cleansers, plaster, polishes, plastics and for rice polishing. Soapstone is used extensively in the form of sawn blocks and bricks for lining the alkali recovery furnaces and kilns of kraft pulp and paper mills. It is used for brick and slab liners for fireboxes, stoves, and ovens, and for switchboard panels, laboratory benches, etc. Considerable quantities of soapstone quarry and sawing waste are ground and used as low-grade talc in the rubber, roofing, foundry, and other trades. Compact, massive talc, sawn into square pencils and slices, is an important material for steelmakers' crayons. Recent shortages of suitable raw material have led to the introduction of extruded crayons compounded of ground talc with a suitable binder.

Under the new Mutilateral Trace Agreement, effective January 1, 1948, the duty on ground talc exported to the United States was reduced from 17½ per cent to 10 per cent ad valorem on material valued at not over \$14 a ton. On material valued at over \$14 a ton, the duty remains at 35 per cent. The duty on crude material is ¼ per cent a pound, whereas cut soapstone or talc in the form of bricks, crayons, blanks, etc., is dutiable at one cent a pound. Talc, ground or unground, enters Canada under the British Preferential tariff at 15 per cent; imports from the United States are dutiable at 20 per cent.

TABLE 294. Principal Statistics of the Talc and Soapstone Industry, 1946-1948

	1946	1947	1948
Number of firms.....	5	5	5
Number of employees:			
Administrative.....	11	12	10
Workmen.....	76	61	48
Total.....	87	73	58
Salaries and wages:			
Salaries..... \$	27,455	32,766	29,035
Wages..... \$	90,096	77,761	73,052
Total..... \$	117,551	110,527	102,087
Selling value of products (gross)..... \$	303,684	266,377	309,823
Cost of fuel and purchased electricity..... \$	25,401	22,786	20,353
Cost of freight and process supplies..... \$	38,167	18,904	8,897
Selling value of products (net)..... \$	240,116	224,687	280,573

TABLE 295. Producers' Shipments of Talc and Soapstone¹ by Provinces, 1946-1948

	1946		1947		1948	
	Quantity	Value	Quantity	Value	Quantity	Value
	tons	\$	tons	\$	tons	\$
Quebec (soapstone) ²	14,914	150,004	13,279	123,467	14,479	145,361
Ontario (talc).....	14,439	153,680	13,430	142,910	14,301	164,462
Canada.....	29,353	303,684	26,709	266,377	28,780	309,823

1. Includes both crude and milled grades.

2. Shipments by some firms usually include a considerable quantity of material classified as talc.

TABLE 296. Shipments of Talc and Soapstone by Producers, 1939-1948

Year	Tons	Value	Year	Tons	Value
		\$			\$
1939.....	18,241	170,066	1944.....	32,597	357,249
1940.....	23,791	229,639	1945.....	27,088	294,888
1941.....	34,632	330,809	1946.....	29,353	303,684
1942.....	29,868	310,824	1947.....	26,709	266,377
1943.....	26,163	266,685	1948.....	28,780	309,823

TABLE 297. Imports and Exports of Talc, 1947 and 1948

	1947		1948	
	Tons	\$	Tons	\$
IMPORTS:				
Talc or soapstone.....	8,472	196,697	7,798	213,438
EXPORTS:				
Talc.....	5,807	68,394	5,052	63,474

TABLE 298. Available Statistics on the Consumption of Ground Talc and Soapstone, 1945-1948

	1945	1946	1947	1948
	(Tons)			
BY USES				
Paints	5,885	5,445	7,352	6,041
Roofing	6,168	8,065	8,618	7,696
Pulp and paper	2,454	2,872	1,899	3,722
Rubber	2,656	2,529	3,075	3,125
Toilet and medicinal preparations	1,373	1,226	1,350	1,242
Electrical apparatus	199	259	330	658
Imported clay products	713	1,107	1,214	1,127
Soaps and cleaning preparations	735	683	524	310
Textiles	267	250	150	150 ¹
Insecticides	943	2,616	2,388	2,461
Polishes	23	31	8	14
Prepared foundry facings	10	17	39	70
Iron foundries	106	106	106	106 ¹
Plastics	10	-	-	-
Adhesives	45	45	6	4
Linoleum	-	19	6	6
Tanneries	-	-	-	50
Total	21,587	25,270	27,115	26,782
BY PROVINCES				
Nova Scotia	59	52	60	56
New Brunswick	475	375	509	292
Quebec	8,133	9,204	10,006	8,334
Ontario	10,731	13,285	14,208	15,911
Manitoba	1,454	1,548	1,503	1,493
Saskatchewan	42	75	81	113
Alberta	67	83	70	96
British Columbia	641	648	678	487
Total	21,587	25,270	27,115	26,782

1. Partly estimated.

TABLE 299. Number of Workmen in the Talc and Soapstone Industry, by Months, 1947 and 1948

Month	1947			1948		
	Surface	Underground	Mill	Surface	Underground	Mill
January	28	13	24	14	8	22
February	34	13	25	13	10	21
March	36	13	25	15	14	23
April	20	13	25	12	12	22
May	46	13	25	12	7	21
June	38	11	27	21	8	20
July	27	13	23	22	9	20
August	22	11	23	22	9	24
September	30	9	21	16	11	19
October	19	10	22	16	12	20
November	9	8	18	27	11	20
December	6	9	18	9	12	21
Average	27	11	23	16	11	21

MISCELLANEOUS INDUSTRIAL OR NON-METALLIC MINERALS

Canadian operators producing certain industrial minerals, and who are usually relatively few in number, have been segregated for statistical purposes into a single group designated as the Miscellaneous Industrial or Non-metal Mining Industry. Minerals or primary mineral products produced (or deposits developed) by this industry during 1948 included barite, brucite, diatomite, fluorspar, garnet, graphite, grindstones, magnesitic-dolomite (crude and refined), mineral waters, silica brick, sodium carbonate and sodium sulphate. For convenience, the sulphur content of pyrites shipped and sulphur recovered from smelter gas are recorded with the various miscellaneous minerals listed above; the value of sulphur production, however, is not included in the total for the miscellaneous non-metallic or industrial minerals

as the value of this element is credited to the copper-gold-silver mining and non-ferrous smelting industries. Statistics for the mica mining industry and for the iron oxides mining industry are also given in this report although they are not included in the totals for the Miscellaneous Non-metal Mining Industry; formerly separate bulletins were issued on these industries.

In 1948 there were 40 plants in the Miscellaneous Non-metal Mining Industry and the gross value of production was \$6,034,352 compared with \$5,130,972 in the preceding year. Salaries and wages paid to 1,161 employees amounted to \$2,497,918. The cost of fuel, electricity, freight, process supplies and containers was recorded at \$1,977,985.

TABLE 300. Principal statistics Relating to the Miscellaneous Non-Metal Mining Industry, 1947 and 1948

	1947	1948
Number of plants	42	40
Number of employees:		
Administrative	119	137
Workmen	919	1,024
Total	1,038	1,161
Salaries and wages:		
Salaries	\$ 304,880	325,306
Wages	1,699,609	2,172,612
Total	2,004,489	2,497,918
Selling value of products (gross)	\$ 5,130,972	6,034,352
Cost of fuel and electricity	953,518	1,081,147
Cost of process supplies used	629,180	689,908
Cost of containers	34,759	126,355
Freight	34,087	80,575
Selling value of products (net)	3,479,428	4,056,367

TABLE 301. Production of Miscellaneous Non-Metallic Minerals, 1947 and 1948

Item	Unit of measure	1947		1948	
		Quantity	Value	Quantity	Value
			\$		\$
Barite	ton	128,675	1,380,753	95,747	1,073,380
Corundum	ton	—	—	—	—
Diatomite	ton	103	2,677	46	1,487
Fluorspar	ton	7,186	209,886	11,340	344,834
Garnet (schist)	ton	1	300	2	200
Graphite	ton	2,398	207,364	2,539	239,931
Grindstones	ton	335	21,475	220	20,100
Magnesitic dolomite	—	—	1,167,484	—	1,587,709
Mineral waters	imp. gal.	198,952	117,440	192,539	110,259
Phosphate	ton	—	—	—	—
Silica brick	M	3,094	193,998	3,464	393,821
Sodium carbonate	ton	163	1,793	—	—
Sodium sulphate	ton	163,290	1,793,043	153,698	2,136,276
Total	—	—	5,096,213	—	5,907,997
Sulphur production ¹	ton	221,781	1,822,867	229,463	1,836,358
Iron oxides	ton	13,418	258,322	13,181	203,391
Mica	ton	4,159	200,903	3,951	219,948

Note. Value of containers is excluded.

1. Includes sulphur content of pyrites at its sales value and estimated figures for quantity and value of sulphur in smelter gases used for acid making. General statistics relating to production of sulphur are included with those of the copper-gold mining and non-ferrous smelting industries.

TABLE 302. Workmen, by Months, in the Miscellaneous Non-Metal Mining Industry, 1947 and 1948

Month	1947						1948			
	Mine			Mill			Mine		Mill	
	Surface		Under-ground				Surface	Under-ground		
	Male	Female					Male			
January.....	237	-	77	601	1	227	112	593	4	
February.....	239	-	80	600	1	217	118	613	4	
March.....	224	-	75	580	2	248	114	631	4	
April.....	253	1	77	577	2	258	98	652	4	
May.....	270	1	82	536	2	274	87	682	4	
June.....	269	-	73	567	2	271	99	729	4	
July.....	273	-	82	563	1	262	96	684	4	
August.....	263	-	89	521	4	265	106	696	4	
September.....	289	-	83	537	5	248	106	736	4	
October.....	296	-	90	608	2	239	94	746	4	
November.....	263	-	115	606	2	209	91	709	4	
December.....	241	-	74	553	2	215	85	604	4	
Average.....	261	1	83	571	3	248	99	673	4	

BARITE

Canadian production of barite in 1948 amounted to 95,747 tons valued at \$1,073,380 compared with 128,675 tons worth \$1,380,753 in the preceding year.

The Canadian Industrial Minerals Limited at Walton, Nova Scotia is the largest producer of barite, mostly for the export markets. In British Columbia, the Mountain Minerals Ltd. shipped crude barite from its properties southeast of Golden. In Ontario the Woodhall Mines Limited shipped some test lots from the Nighthawk River district in the Porcupine area.

For most industrial purposes barite is used in finely ground form, 325 mesh being the general specification. The material should be of good white colour, the best grades being obtained by wet grinding, bleaching with acid, and water floating. Some off-colour material is used for less exacting purposes. Content of BaSO_4 is usually required to be not less than 95 per cent. Chief uses for ground barite are as a heavy, inert filler or loader in rubber, asbestos products, paper, linoleum and oilcloth, textiles, leather and plastics. It is one of the leading pigments and extenders in paints, and has become of increasing importance as a heavy weighting medium in oil-well drilling muds to overcome gas pressures. About 5 tons of barite is used for each 1,000 feet of hole drilled. The requirements are a minimum specific gravity of 4.25 (corresponding to a BaSO_4 content of 93 per cent) and absence of soluble salts. Considerable barite is used in the glass industry as a batch fluxing ingredient for moulded flint glass, for which purpose it should contain not less than 96 per cent BaSO_4 , under 3 per cent moisture, and not more than 0.4 per cent iron oxide (Fe_2O_3), with a fineness range of 20 to 100 mesh.

TABLE 303. Production of Barite, 1940-1948

Year	Tons	\$	Year	Tons	\$
1940.....	338	4,819	1945.....	139,589	1,211,403
1941.....	6,890	74,416	1946.....	120,419	1,006,473
1942.....	19,667	188,144	1947.....	128,675	1,380,753
1943.....	24,474	279,253	1948.....	95,747	1,073,380
1944.....	118,719	1,023,696			

TABLE 304. Imports of Barite, 1940-1948

Year	Tons	\$	Year	Tons	\$
1940.....	2,622	64,922	1945.....	1,150	32,531
1941.....	3,431	81,620	1946.....	1,547	42,904
1942.....	2,536	68,196	1947.....	1,737	51,060
1943.....	1,686	43,239	1948.....	1,263	39,613
1944.....	1,824	47,913			

TABLE 305. Consumption of Barite, 1945-1948

—	1945	1946	1947	1948
	(Tons)			
By Uses				
Paints.....	1,749	1,711	1,658	1,331
Rubber goods.....	478	461	556	659
Wall paper.....	22	—	—	—
Glass.....	879	266	237	380
Miscellaneous.....	200	400	313	1,075
Total.....	3,328	2,838	2,764	3,445
By PROVINCES				
Nova Scotia.....	33	34	24	6
Quebec.....	931	1,123	1,146	1,711
Ontario.....	1,916	1,179	1,210	1,182
Manitoba.....	210	276	227	121
Saskatchewan.....	4	4	7	4
Alberta.....	105	106	11	310
British Columbia.....	129	116	139	111
Canada.....	3,328	2,838	2,764	3,445

Note: Above figures do not include amounts used in oil drilling.

CORUNDUM

No corundum has been produced in Canada since October, 1946, when treatment of the old tailings at the Craigmont property, Renfrew county, Ontario, for the recovery of corundum was completed. This operation was undertaken during the war at the request of the United States Government. During the two years of operation about 2,600 tons of concentrate were shipped from the Craigmont property to American Abrasive Company, Westfield, Massachusetts, the only handler of corundum on the continent.

The main and only zone from which production has been obtained is in a belt 100 miles long and 6 miles wide in Haliburton, Hastings, and Renfrew counties in Ontario. Several of the numerous deposits examined recently contain fair amounts of corundum, the most promising being an extensive deposit in Monteagle township on the east side of the York River, about 10 miles northeast of Bancroft. (For a description of corundum-bearing nepheline syenite belts of south and eastern Ontario see report No. 820 "The Corundum Mineral Industry in 1945", page 53, issued by the Bureau of Mines, Ottawa.) It is doubtful, however, if the production of corundum alone would be economic and consequently marketable by-products would be necessary. Present indications are that a large tonnage of good quality nepheline feldspar product suitable for the glass trade, as well as fine mica for fillers and for backing, can be extracted from the Monteagle deposit, in addition to high-quality fine-grained corundum.

DIATOMITE

All of the Canadian production of diatomite since 1939 has come from deposits in the swamps and lake bottoms of northern Nova Scotia; in southern British Columbia; in the Muskoka area, Ontario; and in various parts of British Columbia. Production in 1948 came from two deposits, one at Digby Neck, Nova Scotia, operated by G. Wightman, and the other on Lot 1122 on the west bank of the Fraser River, north of Quesnel, British Columbia, operated by L.T. Fairey of Vancouver. The Tertiary fresh-water deposits near Quesnel in the Cariboo area are by far the largest known in Canada; they extend for many miles along the Fraser River, are compact, and are up to 40 feet thick. At Digby Neck, Nova Scotia, is the largest known recent fresh-water (swamp) deposit in Canada.

Diatomite is used as a fertilizer dusting agent, for filtration, and as a filler in the paint, chemical, paper, rubber and textile industries. Small amounts are used in silver polish bases, and as an admixture in concrete. A small amount of lime-diatomite insulation bricks is made by a company in Toronto which uses diatomite from Nova Scotia. Diatomite is being used in pressure filters in industrial plants in place of sand filters for the removal of disease-producing organisms.

The ammonium nitrate fertilizers in which diatomite is used as a dusting agent are made in Canada by The Consolidated Mining and Smelting Company of Canada Limited in its plants in Trail, British Columbia, and in Calgary, Alberta; and by North American Cyanamid, Limited, in its plant near Welland, Ontario. The diatomite thus used is highly porous and when added to the nitrate it absorbs moisture and coats the small grains or nitraprills which prevents caking and ensures even spreading. Specifications call for uncalcined material of 325 mesh and less than 5 per cent moisture. Much of the output of these fertilizers is exported.

TABLE 306. Production of Diatomite, 1939-1948

Year	Tons	\$	Year	Tons	\$
1939.....	301	10,388	1944.....	13	437
1940.....	248	7,957	1945.....	46	1,238
1941.....	344	9,935	1946.....	90	2,532
1942.....	365	9,088	1947.....	103	2,677
1943.....	98	3,331	1948.....	46	1,487

TABLE 307. Consumption of Infusorial Earth by the Sugar Refining Industry, 1939-1947

Year	Tons	Value	Year	Tons	Value
		\$			\$
1939.....	2,410	105,711	1944.....	2,188	115,053
1940.....	2,492	112,369	1945.....	1,992	102,961
1941.....	2,672	138,973	1946.....	2,196	104,794
1942.....	1,504	75,295	1947.....	2,490	141,885
1943.....	1,726	89,075			

TABLE 308 Consumption of Diatomaceous Earth in the Manufacture of Fertilizers, 1944-1948

Year	Tons	\$
1944.....	9,690	297,987
1945.....	6,444	274,968
1946.....	8,185	308,446
1947.....	7,488	295,773
1948.....	7,653	316,383

FLUORSPAR

Production of fluorspar in Canada during 1948 was all from the Madoc area in Ontario. The shipments of the four operators totalled 11,340 tons valued at \$344,834, a substantial increase over the 7,186 tons worth \$209,886 produced in 1947.

Fluorspar is used chiefly as a powerful fluxing agent in the steel industry, and is used in small amounts in numerous other metallurgical industries. The next largest market is in the manufacture of hydro-fluoric acid, which is used mainly in making artificial cryolite and aluminum fluoride for the aluminum industry. The fluorspar imported from Newfoundland is used for this purpose at Arvida, Quebec. The ceramic industry is next, and uses fluorspar as a fluxing and opacifying ingredient in glass and enamels. Uranium hexafluoride is used for the gaseous diffusion separation of the uranium isotopes U235 and U238 in the development of atomic energy.

TABLE 309. Principal Statistics of the Fluorspar Mining Industry, 1947 and 1948

	1947	1948
Active firms..... No.	5	4
Employees:		
Administrative..... No.	8	4
Workmen..... No.	56	60
Total..... No.	64	64
Salaries and wages:		
Salaries..... \$	25,940	19,799
Wages..... \$	86,542	105,648
Total..... \$	112,482	125,447
Gross value of production..... \$	209,886	344,834
Cost of fuel and electricity..... \$	16,851	24,139
Process supplies used..... \$	9,117	7,892
Net value of production..... \$	183,918	312,803

TABLE 310. Production of Fluorspar, 1939-1948

Year	Tons	\$	Year	Tons	\$
1939.....	240	4,995	1944.....	6,924	217,701
1940.....	4,454	59,317	1945.....	7,369	233,708
1941.....	5,534	97,767	1946.....	8,042	237,491
1942.....	6,199	146,039	1947.....	7,186	209,886
1943.....	11,210	318,424	1948.....	11,340	344,834

TABLE 311. Imports of Fluorspar, 1939-1948

Year	Tons	\$	Year	Tons	\$
1939.....	16,322	258,796	1944.....	37,100	840,309
1940.....	30,312	628,719	1945.....	20,517	530,670
1941.....	26,539	567,656	1946.....	31,813	717,094
1942.....	47,784	1,046,526	1947.....	32,001	702,419
1943.....	77,436	1,738,669	1948.....	48,925	1,105,190

TABLE 312. Consumption of Fluorspar, 1945-1948

	1945	1946	1947	1948
	(Tons)			
(a) BY USES				
Steel.....	19,462	13,805	18,768	20,651
Glass.....	302	145	752	569
Enamelling and glazing.....	200	220	244	257
Heavy chemicals.....	3,600	3,388	3,534	32,596
Non-ferrous smelters.....	12,830	10,972	18,037	
Ferro-alloys.....	792	1,431	—	—
White metal alloys.....	20	34	44	36
Miscellaneous.....	100	—	—	—
Total.....	37,304	29,995	41,379	53,109
(b) BY PROVINCES				
Nova Scotia.....	7,390	6,612	7,566	7,908
Quebec.....	13,300	11,098	18,142	29,777
Ontario.....	16,266	12,058	15,181	16,054
Manitoba.....	170	205	225	298
Alberta.....	70	—	245	61
British Columbia.....	110	22	20	11
Total.....	37,304	29,995	41,379	54,109

GARNET

During 1948 the Niagara Garnet Company shipped a small quantity of pulverized garnet. The garnet ore had been mined in earlier years from the deposit near River Valley in Dana township, Ontario. The ore was crushed and concentrated at the firm's mill located at Sturgeon Falls.

Garnet is used for making abrasive-coated papers and cloth, which in turn are used mainly in the wood-working and shoe-leather industries. Garnet flour or superfine grade is used as a partial substitute for corundum flour for polishing optical lenses.

GRAPHITE

Production of graphite in Canada came from the Black Donald mine, Renfrew county, Ontario, the only operating property in Canada. The property has been sold to the Hydro-Electric Commission of Ontario, in connection with water power development on the Madawaska River. Completion of the project will result in flooding a part of the property, but the Black Donald mine retains the right to operate until the land is actually required for flooding purposes.

Graphite has many uses, but is employed principally in foundry facings, lubricants, crucibles, retorts and stoppers, packings, pencils and crayons, paints, and stove polish. Important quantities, mostly amorphous or artificial, are used in dry batteries, electrodes, and commutator brushes. Flake from the Black Donald deposit is too small for crucible use and finished products consist mainly of amorphous foundry grades, but include high-grade fine flake and dust sold for use in lubricants, packings, and polishes. Prepared facings for the domestic foundry trade also are made.

In Canada, graphite is used chiefly in the foundry, dry battery, packings, lubricants, and paint trades. Foundry needs are met in part by domestic production, and in part by plumbago from Ceylon. The battery trade uses mainly Mexican amorphous, and paint requirements are filled largely by low-grade amorphous flake. American imports of Canadian graphite are used chiefly in foundry facings, lubricants, and pencils.

TABLE 313. Mine Production (Sales) of Graphite, 1939-1948

Year	Tons	\$	Year	Tons	\$
1939.....	1,101	61,684	1944.....	1,582	179,457
1940.....	1,382	94,038	1945.....	1,910	187,364
1941.....	1,644	132,924	1946.....	1,975	180,405
1942.....	1,192	117,904	1947.....	2,398	207,364
1943.....	1,903	197,431	1948.....	2,539	239,931

Grindstones, Pulpstones and Scythestones (natural)

Sandstone beds in Nova Scotia, New Brunswick and British Columbia contain material suitable for grindstones. The output is only from the New Brunswick coast where the stones are removed along the shore area of the Bay of Chaleur.

During 1948 the shipments of grindstones amounted to 220 tons valued at \$20,100 as compared with 335 tons worth \$21,475 in the previous year.

TABLE 314. Production of Natural Grindstones, Pulpstones and Scythestones, 1939-1948

Year	Tons	\$	Year	Tons	\$
1939.....	304	15,278	1944.....	225	12,000
1940.....	341	14,543	1945.....	225	10,870
1941.....	188	11,500	1946.....	295	17,450
1942.....	216	10,000	1947.....	335	21,475
1943.....	164	6,225	1948.....	220	20,100

TABLE 315. Production of Natural Abrasive Stones, 1947 and 1948

	Grindstones			
	1947		1948	
	Tons	\$	Tons	\$
Nova Scotia.....	—	—	—	—
New Brunswick.....	335	21,475	220	20,100
Canada.....	335	21,475	220	20,100

TABLE 316. Consumption of Pulpstones¹ by the Pulp and Paper Industry, 1939-1947

Year	Number for 2 ft. wood	Value	Number for 2.5 ft. wood	Value	Number for 4 ft. wood	Value
		\$		\$		\$
1939.....	242	60,622	60	22,443	203	238,620
1940.....	311	96,957	110	49,899	163	257,628
1941.....	295	127,349	77	35,843	97	215,913
1942.....	237	100,466	53	23,898	94	208,986
1943.....	197	102,888	54	20,000	66	151,411
1944.....	187	89,133	57	34,865	76	193,396
1945.....	191	117,585	33	14,132	114	271,108
1946.....	233	121,705	41	16,868	139	349,866
1947.....	258	153,075	35	22,629	153	409,060

1. Includes artificial pulpstones.

IRON OXIDES

Canadian producers of ochreous iron oxides in 1948 shipped 13,181 tons of this material valued at \$203,391 f.o.b. shipping points. Except for a small tonnage in British Columbia all of these shipments originated in Quebec.

The ochreous iron oxide used in the manufacture of paints is largely in the calcined form. However, a small quantity of natural iron oxides associated with clay-like materials in the form of umbers and siennas is also used as pigments in paints, both in the raw and calcinated state.

Iron oxide pigments are used also as colouring agents and fillers in the manufacture of imitation leather, shade cloth, shingle stain, paper and cardboard. Siennas and umbers are used in wood stains and wood fillers. The natural ochre is used as a pigment for linoleum and oilcloth; as a pigment in wood stains and wood fillers; and in colouring cement, stuccos, and mortar.

A portion of iron oxide mined in Quebec and nearly all of that mined in British Columbia is used for the purification of illuminating gas.

The prices as quoted by the Canadian Chemistry and Process Industries for iron oxide were:— red, 2 to 11 cents per pound; yellow, 5 to 7 cents; brown, 5 to 8 cents; and black 9 to 12 cents per pound.

TABLE 317. Principal Statistics of the Natural Iron Oxides Industry, 1946-1948

	1946	1947	1948
Number of firms	5 ¹	6 ¹	7 ¹
Number of employees:			
Administration	9	8	7
Workmen	51	46	48
Total	60	54	55
Salaries and wages:			
Salaries	\$ 15,748	13,816	11,157
Wages	\$ 61,979	68,553	73,402
Total	\$ 77,727	82,369	84,559
Selling value of products (gross)	\$ 152,268	258,322	203,391
Cost of fuel and purchased electricity	\$ 16,656	24,802	25,574
Cost of process supplies	\$ 4,200	6,628	4,625
Freight	\$ 15,161	9,474	8,066
Selling value of products (net)	\$ 116,251	217,418	165,126

1. One producer in British Columbia, remainder in Quebec.

TABLE 318. Production of Natural Iron Oxides, 1939-1948

Year	Tons	Value	Year	Tons	Value
		\$			\$
1939	6,015	88,418	1944	8,599	150,250
1940	9,979	111,874	1945	10,314	172,053
1941	10,045	142,069	1946	12,695	152,268
1942	9,304	151,653	1947	13,418	258,322
1943	8,401	135,893	1948	13,181	203,391

TABLE 319. Imports and Exports of Ochres and Colours, 1947 and 1948

	1947		1948	
	Tons	Value	Tons	Value
		\$		\$
IMPORTS:				
Ochres, ochrey earths, siennas and umbers.....	1,236	68,426	1,462	71,272
Oxides, fireproofs, rough stuff, fillers and colours, dry, n.o.p.....	4,104	2,047,954	3,891	2,468,127
EXPORTS:				
Iron oxides.....	5,387	313,017	5,250	312,585

TABLE 320. Consumption of Iron Oxides in Specified Industries, 1939-1948

Year	Coke and gas		Paints and varnishes			
			Iron oxide pigments		Ochres, siennas and umbers	
	Tons ¹	Value	Tons	Value	Tons	Value
		\$		\$		\$
1939.....	-	35,417	882	80,274	523	46,134
1940.....	5,417	42,491	1,146	112,826	575	62,636
1941.....	5,133	36,480	1,602	187,836	464	52,385
1942.....	4,600	33,790	2,334	253,383	412	52,155
1943.....	6,568	45,946	2,321	222,858	440	68,425
1944.....	9,194	71,545	2,614	242,234	648	69,092
1945.....	7,357	75,441	2,799	310,434	671	71,231
1946.....	9,385	69,899	2,564	288,190	543	75,769
1947.....	10,105	78,244	2,865	339,151	404	57,876
1948.....	9,157	77,035	2,222	302,562	306	47,379

¹ Oxide and purifying materials.

LITHIUM MINERALS

Amblygonite, spodumene, and lepidolite are the chief lithium minerals of commerce; their ores contain, respectively, about 8, 6 and 4 per cent of lithium oxide. Spodumene is in greatest supply, and is the base raw material for the manufacture of many lithium salts, lithium metal, and alloys. Amblygonite has similar uses, but is scarcer and more expensive. Lepidolite, or lithia mica, is employed mainly in the natural state as a batch ingredient in glass. The occurrence of all three minerals is confined to pegmatite dykes of a definite type, which usually have a localized, regional distribution and often carry, also, important amounts of beryl and tantalite-columbite. In some cases, such dykes have been worked for the recovery of all of these minerals.

There has been no recorded production of lithium minerals in Canada since 1937, when 32 tons of amblygonite and spodumene valued at about \$1,700 was shipped, and little if any lithium ore is known to be used or required for any purpose in the Dominion. Thus, an outside market would have to be found for any production. Considerable development work has been done in recent years, however, on deposits in the Pointe du Bois area in southeastern Manitoba; increased interest was shown in the commercial possibilities of lithium deposits in other sections of that province, though activities have been confined to exploratory drilling. Some attention has been given, also, to lithium-bearing deposits in the Yellowknife-Beaulieu area in the Northwest Territories, and in LaCorne township in northwestern Quebec.

Total production in Canada during the active period 1925-1937, inclusive, is estimated at about 250 tons, and comprised lepidolite, spodumene, and amblygonite. Most of the material was exported to the United States.

MAGNESITE AND BRUCITE

Magnesitic dolomite is quarried at Kilmar, Argenteuil county, Quebec, by Canadian Refractories Limited and is processed there into basic refractory products. These include dead-burned grain material; bricks and shapes (burned and unburned); and finely ground refractory cements.

Brucitic limestone, a rock composed of granules of the mineral brucite (magnesium hydroxide) thickly distributed throughout a matrix of calcite, is quarried from large deposits near Wakefield, Quebec, by Aluminum Company of Canada, Limited, and is processed there for the recovery of magnesia and lime. The magnesia is used in part by the company for making magnesium metal at Arvida, Quebec, but the major part of the output is sold for the manufacture of basic refractories and for use as fertilizer. Hydrated lime, the co-product, is produced in the process of recovering the magnesia, and is sold for the various purposes for which lime is used.

TABLE 321. Production of Magnesitic Dolomite (Calcined), 1939-1948

Year	Value	Year	Value
	\$		\$
1939.....	474,418	1944.....	1,139,281
1940.....	897,016	1945.....	1,276,596
1941.....	831,041	1946.....	1,225,593
1942.....	1,059,374	1947.....	1,167,584
1943.....	1,260,056	1948.....	1,587,709

1. 1942 and following years include the value of brucite shipped.

TABLE 322. Magnesite and Dolomite Used in the Primary Iron and Steel Industry, 1939-1948

Year	Calcined Dolomite		Dolomite, crude		Magnesite	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
1939.....	14,858	99,838	40,592	78,904	11,401	351,680
1940.....	21,949	136,360	59,284	123,429	13,673	506,032
1941.....	21,608	160,602	71,087	159,037	18,127	682,742
1942.....	22,550	179,427	79,091	225,393	20,665	786,321
1943.....	10,310	99,740	78,746	243,793	19,427	744,716
1944.....	8,516	125,990	134,907	296,631	18,665	740,450
1945.....	6,146	111,581	110,478	266,236	18,249	755,958
1946.....	3,788	66,473	87,217	230,384	13,049	545,396
1947.....	6,748	124,107	188,449	357,288	18,261	783,336
1948.....	9,587	198,040	226,683	539,522	18,334	888,755

TABLE 323. Calcined Magnesite Used by the Artificial Abrasives and Abrasive Products Industry, 1939-1948

Year	Tons	Value	Year	Tons	Value
		\$			\$
1939.....	121	7,735	1944.....	771	103,591
1940.....	302	19,331	1945.....	840	96,780
1941.....	809	77,508	1946.....	1,676	167,250
1942.....	398	58,648	1947.....	1,832	195,586
1943.....	150	12,164	1948.....	3,284	389,335

MAGNESIUM SULPHATE

Natural hydrous magnesium sulphate (Epsom Salts or Epsomite) occurs in deposits in lake bottoms or in solution in brine lakes in British Columbia. In Saskatchewan, it is found associated with sodium sulphate. Attempts have been made to produce refined salts, and a number of years ago there was a considerable production from several of the "lakes" in British Columbia. Experimental shipments have been made also from one of the lakes in Saskatchewan.

Canada's output of magnesium sulphate has come chiefly from a deposit in Basque, British Columbia, production from which was discontinued in the autumn of 1942. The salt was refined at Ashcroft, 15 miles south of the deposit, and the grade was high. The refinery, now owned by Ashcroft Salts Company Limited, had a capacity of 10 tons of salt a day. There are a number of other occurrences in British Columbia, near Clinton, north of Kamloops, and in Kruger's Pass, south of Penticton.

In Saskatchewan, two lakes south of Wiseton contain brines high in magnesium sulphate, and Muskiki Lake, just north of Dana, contains brine high in magnesium and sodium sulphates, which at certain times of the year crystallizes into a bedded deposit with layers of both salts.

In the chemical industries Epsom salt has many uses. It is employed for tanning and in dyeing, and for textile and medicinal use. Magnesium sulphate is used in the paper industry for weighting paper. In the sole leather industry it is used to obtain a clean shiny cut, and it also helps to retain moisture in the leather and increases its weight. Magnesium salt is used to a small extent in the dyeing industry. In some cases it is used in the treatment of leather to increase the fastness of the colour in washing. It is used extensively and in large quantities in medicine and for various purposes in the manufacture of textiles. In bleaching wool, magnesium sulphate is added to destroy the corrosive effect of sodium peroxide. It is also used for weighting textile fabric, especially silk. Mixed with gypsum and ammonium sulphate, it is used in the manufacture of non-inflammable fabrics.

TABLE 324. Production of Natural Magnesium Sulphate¹, 1939-1948

Year	Tons	Value	Year	Tons	Value
		\$			\$
1939.....	550	9,900	1944.....	-	-
1940.....	-	-	1945.....	-	-
1941.....	225	7,343	1946.....	-	-
1942.....	1,140	38,770	1947.....	-	-
1943.....	-	-	1948.....	-	-

1. Produced entirely in British Columbia.

TABLE 325. Imports of Magnesium Sulphate, 1939-1948

Year	Tons	Value	Year	Tons	Value
		\$			\$
1939.....	1,051	56,648	1944.....	2,684	108,795
1940.....	2,211	80,090	1945.....	2,545	101,695
1941.....	2,729	109,022	1946.....	3,463	132,342
1942.....	1,688	68,532	1947.....	2,908	108,840
1943.....	3,379	137,372	1948.....	2,797	116,792

TABLE 326. Available Data on Consumption of Magnesium Sulphate, 1945-1948

Industry	1945	1946	1947	1948
	tons			
Leather tanneries.....	1,013	1,019	935	732
Medicinals.....	321	645	611	459
Fertilizers.....	431	57	14	15
Textiles.....	44	28	38	134
Total Accounted For.....	2,516	1,749	1,598	1,376

MICA

Canadian production or primary shipments of all grades of mica in 1948 totalled 7,902,303 pounds valued at \$219,948, compared with 8,318,755 pounds worth \$200,903 in the previous year. The Quebec mines contributed 4,275,195 pounds valued at \$173,744 and the mines of Ontario shipped 3,125,308 pounds worth \$37,674; the British Columbia mines shipped 501,800 pounds of muscovite valued at \$8,530.

Most of the output of sheet phlogopite is handled and prepared for market by producers and dealers having trimming establishments in or near Ottawa. A few operators have made direct mine shipments of semi-rough mica to the United States for the production there of punched shapes. The making of thin splittings, now done on a very much smaller scale than formerly, is mostly farmed out in small rural communities in the Ottawa district. Scrap mica still continues to be recovered on a considerable scale from old mine dumps, and these furnish most of the scrap sold for grinding, as well as considerable amounts of screened untrimmed small mica shipped to the United States for the making of mechanical splittings.

TABLE 327. Principal Statistics of the Mica Mining Industry, 1947 and 1948

	1947	1948
Number of firms or operators	38	34
Number of employees:		
Administrative	14	13
Workmen	104	96
Total	118	109
Salaries and wages:		
Salaries	\$ 26,887	\$ 18,167
Wages	\$ 120,464	\$ 100,815
Total	\$ 147,351	\$ 118,982
Selling value of products (gross)	\$ 200,903	\$ 219,948
Cost of fuel and electricity	\$ 19,609	\$ 14,622
Cost of process supplies used	\$ 8,986	\$ 18,225
Selling value of products (net)	\$ 172,308	\$ 187,098

TABLE 328. Mica Production (Primary Sales) in Canada, by Classes, 1947 and 1948

Grade	1947		1948	
	Pounds	Total value f.o.b. shipping point	Pounds	Total value f.o.b. shipping point
		\$		\$
Rough, mine-run or rifted	246,947	30,504	21,918	2,693
Mica sold for mechanical splitting	291,549	54,357	317,005	67,635
Splittings	10	3	17,514	14,028
Ground or powdered	4,177,251	66,596	3,748,268	84,224
Scrap—Mine or shop waste and mica mined and sold for grinding	3,578,898	30,781	3,716,840	33,813
Ungraded	—	—	5,734	345
Trimmed mica	24,100	18,662	75,024	17,210
Total mica shipments	8,318,755	200,903	7,902,303	219,948
Varieties:				
Phlogopite mica (amber)	6,510,755	176,663	7,400,503	211,418
Muscovite mica (white)	1,808,000	24,240	501,800	8,530

TABLE 329. Production (Sales) of Mica, by Provinces and by Varieties, 1948

Province	Phlogopite		Muscovite		Total	
	Pounds	\$	Pounds	\$	Pounds	\$
Quebec	4,275,195	173,744	—	—	4,275,195	173,744
Ontario	3,125,308	37,674	—	—	3,125,308	37,674
British Columbia	—	—	501,800	8,530	501,800	8,530
Total Canada	7,400,503	211,418	501,800	8,530	7,902,303	219,948

TABLE 330. Production (Sales) of Mica, 1939-1948

Year	Tons	\$	Year	Tons	\$
1939.....	1,068	147,321	1944.....	3,342	841,026
1940.....	975	237,145	1945.....	3,522	233,270
1941.....	1,743	335,288	1946.....	4,360	199,039
1942.....	3,010	383,567	1947.....	4,159	200,903
1943.....	4,025	553,856	1948.....	3,951	219,948

TABLE 331. Imports and Exports of Mica, 1947 and 1948

	1947		1948	
	Pounds	Value	Pounds	Value
		\$		\$
IMPORTS:				
Mica and manufactures of, n.o.p.	-	571,638	-	407,202
Vermiculite, crude	-	129,992	-	128,839
EXPORTS:				
Mica, scrap and waste.....	2,560,600	21,724	1,998,900	16,002
Mica splittings.....	3,400	2,186	11,300	8,272
Mica manufactures.....	-	185	-	1,862
Mica, rough, untrimmed.....	430,200	71,002	354,300	75,205
Mica, trimmed.....	46,100	25,492	8,500	3,835
Mica, ground.....	180,000	6,940	2,121,200	45,165
Total mica exports.....	-	127,529	-	150,361

TABLE 332. Consumption of Mica, in Specified Industries, as Reported to the Annual Census of Industry, 1946 and 1947

	1946		1947	
	Quantity	Cost at works	Quantity	Cost at works
	(tons)	\$	(tons)	\$
In electrical apparatus industry.....	178	355,160	206	519,402
In rubber industry.....	132	16,868	191	26,350
In roofing.....	1,064	39,651	1,778	62,071
In wallpaper.....	199	27,201	146	20,791
In mica manufacturing industry.....	70	109,475	54	92,038
Total Accounted For.....	1,643	548,355	2,377	721,302

NATURAL MINERAL WATERS

Production of natural mineral waters in past years originated in Ontario and Quebec. Some of the more prominent Canadian mineral waters possessing special therapeutic or hygienic properties include the following: in Quebec, the Abenakis springs on the St. François river in Yamaska county, Potton Springs in Brome county and the Columbia spring at L'Epiphanie. In Ontario, saline, sulphur and gas springs occur at Caledonia Springs and at Carlsbad Springs, near Ottawa; the waters range from alkaline to strongly saline. St. Catharines, near Niagara, is one of the oldest Canadian mineral water resorts and sulphur waters are found at the Preston mineral springs in Waterloo county. The most famous of all Canadian springs is undoubtedly the group of hot sulphur springs at Banff, Alberta. In British Columbia, the Harrison Hot Springs in Fraser Valley and the Halcyon Hot Springs on Arrow Lake are noted for their curative properties.

There were 14 firms reporting production of natural mineral waters in the Dominion in 1948. Twelve of these firms were in Quebec and 2 in Ontario.

TABLE 333. Shipments of Natural Mineral Waters from Canadian Springs, 1939-1948

Year	Quebec		Ontario		Canada	
	Imp. gal.	\$	Imp. gal.	\$	Imp. gal.	\$
1939.....	194,629	17,503	19,140	1,602	123,769	19,105
1940.....	109,025	18,466	31,638	2,426	140,663	20,892
1941.....	144,441	58,062	36,623	14,469	181,064	72,531
1942.....	129,062	60,316	28,023	14,189	157,085	74,505
1943.....	125,605	61,793	14,006	5,748	139,611	67,541
1944.....	148,963	88,113	7,165	976	156,130	88,918
1945.....	236,476	148,714	8,285	805	244,761	149,690
1946.....	211,842	121,520	6,000	878	217,842	122,404
1947.....	195,452	116,840	3,500	600	198,952	117,440
1948.....	190,136	109,789	2,400	470	192,539	110,259

PHOSPHATE

Phosphate in the form of apatite was mined on a fairly substantial scale up to 1895 but since then the production has been small and spasmodic. There has been no recorded production in Canada since 1946.

There has been renewed activity at the old Charles mine near Notre Dame de Salette in the Buckingham, Quebec area. It is expected that an economical separation process may be developed to produce a high grade material.

For many years, Electric Reduction Company, Buckingham, Quebec, has purchased most of the small output for use in the production of elemental phosphorus and various phosphorus compounds. The company, however, obtains most of its phosphate rock requirements from Florida. That state and Montana supply the great bulk of the phosphate rock which Canada imports for the manufacture of fertilizer, occasional shipments being obtained also from North Africa. Rock low in fluorine is obtained from Curacao, Netherlands West Indies, for use in stock feeds.

TABLE 334. Production of Phosphate Rock, 1939-1948

Year	Tons	\$	Year	Tons	\$
1939.....	157	1,712	1944.....	482	6,716
1940.....	358	4,039	1945.....	299	4,356
1941.....	2,467	32,376	1946.....	57	869
1942.....	1,264	17,431	1947.....	-	-
1943.....	1,451	18,385	1948.....	-	-

TABLE 335. Imports of Phosphate Rock, 1939-1948

Year	Tons	Value	Year	Tons	Value
		\$			\$
1939.....	124,900	477,317	1944.....	388,247	1,710,378
1940.....	165,358	663,554	1945.....	317,695	1,450,580
1941.....	297,026	863,333	1946.....	373,677	2,164,841
1942.....	271,373	1,053,226	1947.....	485,391	2,857,522
1943.....	260,846	1,085,080	1948.....	482,008	2,911,168

TABLE 336. Consumption of Phosphate Rock, 1946-1948

	1946	1947	1948
	(Tons)		
BY USES			
Fertilizers.....	372,914	398,085	372,976
Chemicals.....	17,861	25,343	28,280
Steel furnaces.....	1,989	1,295	
Refractories.....	153	148	8,813
Miscellaneous.....	7,100	9,500	
Total.....	400,017	434,971	410,069
BY PROVINCES			
Quebec.....	85,871	107,484	99,066
Ontario.....	70,933	83,243	72,187
British Columbia.....	243,213	244,244	238,800
Total.....	400,017	434,971	410,069

SILICA BRICK

The manufacture of silica brick for refractory use was confined to the plants of the Dominion Steel and Coal Company, Limited, Sydney, Nova Scotia, and the Algoma Steel Corporation Limited, Sault Ste. Marie, Ontario. The brick manufactured by both these firms are processed from crushed silica rock and are utilized in furnace construction and repairs.

TABLE 337. Production of Silica Brick, 1939-1948

Year	M	\$	Year	M	\$
1939.....	2,493	124,807	1944.....	3,997	312,092
1940.....	3,438	182,786	1945.....	4,208	317,263
1941.....	4,111	238,433	1946.....	2,902	197,804
1942.....	4,273	263,006	1947.....	3,094	193,998
1943.....	4,165	295,505	1948.....	3,464	393,821

Note. Quantities are shown as 9" equivalent.

SODIUM CARBONATE (Natural)

Deposits of natural sodium carbonate in the form of "Natron" (sodium carbonate with 10 molecules of water) and of brine occur in a number of small "lakes" throughout the central part of British Columbia, chiefly in the Clinton Mining Division and in the neighborhood of Kamloops. As the deposits are far from the main eastern Canadian markets, production is restricted to the requirements of consumers within economical rail haul.

Sodium carbonate has many industrial uses, notably in the manufacture of glass and soap, in the purification of oils, in the production of aluminum, in the flotation of minerals, in the refining of metals, and in the production of caustic soda.

TABLE 338. Production of Sodium Carbonate (Natural), 1939-1948

Year	Tons	\$	Year	Tons	\$
1939.....	300	2,400	1944.....	44	484
1940.....	220	1,760	1945.....	280	3,146
1941.....	186	1,488	1946.....		
1942.....	256	2,048	1947.....	163	1,793
1943.....	468	5,148	1948.....	-	-

SODIUM SULPHATE (Natural)

The entire production of natural sodium sulphate in 1948 came from the brine lakes of Saskatchewan. The shipments of 153,698 tons during the year were slightly less than the previous year but the total value of \$2,136,276 was greater.

Sodium sulphate occurs as crystals or in the form of highly concentrated brines in many lakes and deposits throughout Western Canada. From these, hydrated sodium sulphate, known as Glauber's salt, and anhydrous sodium sulphate, known to the trade as "salt cake", are produced in Canada.

Glauber's salt is used widely in the chemical industries and the demand is increasing. Sodium sulphate is used chiefly in the sulphate process for the manufacture of kraft pulp, and large amounts are used at Copper Cliff in the smelter. It is used in the glass, dye and textile industries and to a smaller extent for medicinal purposes, and for tanning.

TABLE 339. Principal Statistics of Sodium Sulphate Mining Industry, 1947 and 1948

	1947	1948
Active firms..... No.	4	5
Producing plants..... No.	4	6
Employees:		
Administrative..... No.	15	29
Workmen..... No.	218	337
Total Employees..... No.	233	366
Salaries..... \$	38,224	59,308
Wages..... \$	418,445	720,572
Total Salaries and Wages..... \$	456,669	779,880
Gross value of production..... \$	1,798,481	2,142,576
Cost of fuel and electricity..... \$	370,557	536,337
Cost of process supplies and containers..... \$	99,156	114,357
Net Value of Production..... \$	1,328,768	1,491,882

TABLE 340. Production of Natural Sodium Sulphate¹, 1939-1948

Year	Tons	\$	Year	Tons	\$
1939.....	71,485	628,151	1944.....	102,421	987,842
1940.....	94,260	829,589	1945.....	93,068	884,322
1941.....	115,608	931,534	1946.....	105,919	1,117,683
1942.....	131,258	1,079,692	1947.....	163,290	1,793,043
1943.....	107,121	1,025,151	1948.....	153,698	2,136,276

1. All produced in the province of Saskatchewan, with the following exceptions:

Includes production in Alberta: 1939 - 10 tons, value \$186
1940 - 10 tons, value \$50
1941 - 8 tons, value \$32

TABLE 341. Production of Manufactured Sodium Sulphate, 1939-1948

Year	Salt cake		Glauber's salt	
	Tons	\$	Tons	\$
1939.....	2,661	40,219	3,189	52,331
1940.....	4,100	61,567	4,425	82,969
1941.....	5,191	83,991	3,372	64,203
1942.....	4,945	68,377	914	18,761
1943.....	4,256	57,526	-	-
1944.....	3,758	46,077	-	-
1945.....	2,850	35,226	-	-
1946.....	2,584	33,333	-	-
1947.....	3,175	51,047	-	-
1948.....	3,198	69,876	-	-

TABLE 342. Imports of Sodium Sulphate, 1939-1948

Year	Salt cake		Glauber's salt	
	Tons	\$	Tons	\$
1939.....	6,542	73,375	1,330	20,102
1940.....	8,295	94,674	543	12,450
1941.....	7,819	105,502	250	8,244
1942.....	7,070	85,479	75	4,664
1943.....	11,904	150,496	566	15,399
1944.....	20,460	195,105	777	21,960
1945.....	13,535	120,982	1,016	29,452
1946.....	20,881	244,617	1,258	33,136
1947.....	9,329	172,331	1,383	41,125
1948.....	12,394	240,228	1,472	52,212

STRONTIUM MINERALS

In Ontario, several occurrences of celestite are known in the general Ottawa region, but very little mining has been undertaken for the mineral, and production has been small and intermittent.

Between 1918 and 1920, about 250 tons of white, fibrous celestite was mined from a deposit in Bagot township, Renfrew county, and after grinding in a small mill erected on the property was sold for use in paint. The material was not very pure and contained about 18 per cent of barium sulphate. The old pit was pumped out in 1941 and a few tons of ore was scaled down from a small drift. This, together with some stockpile material from earlier work, was shipped to Montreal for grinding and pigment use. The property has since been idle. The above comprises the only production of strontium minerals in Canada of which there is any official record.

Celestite similar in character and analysis to that from the above locality occurs at certain of the fluorspar mines of the Madoc area, Hastings county, but no attempt at commercial recovery has ever been made.

In Lansdowne township, Leeds county, platy crystals of very pure celestite analysing 99 per cent strontium sulphate occur as the filling of a narrow, 1 to 2 foot, vein in crystalline limestone. A couple of small surface pits were opened on the deposit many years ago, but there are no records of any shipments. No further attempt at development has been made. The ore should be well adapted to concentration by gravity methods, but the deposit is unlikely to be capable of yielding more than a small tonnage.

Celestite similar to the foregoing occurs also in Fitzroy township, Carleton county, in a narrow vein in crystalline limestone. The deposit was encountered in a small prospect pit opened for galena about thirty-five years ago, but no attempt has ever been made to determine its extent. A selected sample of the purest material analysed 93 per cent strontium sulphate.

Tabular crystals of celestite analysing 76 per cent strontium sulphate and 15 per cent barium sulphate occur as the cementing material of brecciated fragments of crystalline limestone on a fault-zone in Loughborough township, Frontenac county. A small pit was opened on the deposit about 40 years ago, but no shipments were made, and no further work has been done.

In British Columbia, celestite occurs near Birch Island, North Thompson River, Kamloops Mining Division. The deposit is reported to contain a large tonnage of ore consisting of a fine-grained inter-growth of fluorspar, celestite, feldspar, quartz, mica, and pyrite. Celestite is estimated to form up to 17 per cent of the mass, and fluorspar

up to 27 per cent. Milling tests have shown that a grind of minus 200-mesh is necessary to unlock fluorspar and celestite grains, but some difficulty was met in recovering clean concentrates of either mineral. The property is controlled by B.C. fluorspar Syndicate, of Toronto, who conducted considerable exploration of the deposit, including diamond drilling, between 1942 and 1944. No further development has been reported.

There are a number of recorded minor occurrences in Canada of celestite and strontianite, these being located in Ontario, Quebec, Nova Scotia, and British Columbia. They are briefly mentioned in Mines Branch report No. 570, "Barium and Strontium in Canada", but none of them is regarded as of any economic interest.

SULPHUR (Including Pyrite)

Deposits of native sulphur of commercial grade have not been found in Canada, but sulphur occurs in combination with copper, lead, zinc, nickel, or iron in many base metal sulphide orebodies in various parts of the country. In smelting these ores sulphur dioxide gas is produced, and to 1925 this gas was a total waste as no facilities were available for the recovery from it of sulphur or of sulphur compounds. In practice this gas can be used directly for the manufacture of liquid sulphur dioxide or for the production of elemental sulphur. Sulphur used in the making of sulphuric acid is recovered in the form of sulphur dioxide from salvaged gas by The Consolidated Mining and Smelting Company of Canada, Limited, at Trail, British Columbia, and by Canadian Industries Limited, at Copper Cliff, Ontario. There has been no production of elemental sulphur in Canada since July 1943.

Pyrite is produced in Canada as a by-product in the treatment of copper-pyrite ores at Waite-Amulet and Noranda mines in Quebec and Britannia mine in British Columbia. No lump pyrite has been produced in Canada for several years, and published statistics on recent pyrite production refer to by-product iron pyrite recovered in the concentrating of copper and copper-zinc ores.

In Quebec, Noranda Mines Limited, Noranda, recovers the pyrite from the cyanide mill tailings and sells it to pulp and paper mills at Trois Rivières and at Hull, Quebec, and to chemical plants in Canada and the United States. Waite Amulet Mines, Limited has been producing a pyrite concentrate since March 1944, which it ships mainly to the United States. Noranda Mines Limited are operating a pilot plant for the recovery of elemental sulphur from pyrite. It is expected that the iron residues will be used to produce pig iron.

In British Columbia, the Britannia mine ships a portion of the iron pyrite concentrate to the acid plant of the Nichols Chemical Company at Barnet, British Columbia. Quite a large tonnage of pyrite which has been stockpiled was exported during the year.

TABLE 343. Production of Sulphur¹, 1939-1948

Year	Tons	\$	Year	Tons	\$
1939.....	211,278	1,668,025	1944.....	243,088	1,755,739
1940.....	170,630	1,298,018	1945.....	250,114	1,881,321
1941.....	260,023	1,702,786	1946.....	234,771	1,784,666
1942.....	303,714	1,994,891	1947.....	221,781	1,822,867
1943.....	257,515	1,753,425	1948.....	229,463	1,836,358

1. Includes sulphur recovered from smelter gas.

TABLE 344. Production of Pyrite with Sulphur Content, Including Sulphur Contained in Sulphuric Acid, etc., Made from Smelter Gases, 1946-1948

—	Pyrite			Smelter gas		Total sulphur	
	Sales	Sulphur content		Sulphur content		Tons	Value
	Tons	Tons	Value	Tons	Value		
			\$		\$		
1946							
Quebec	194,291	92,716	375,328	—	—	92,716	375,328
Ontario	—	—	—	15,433	154,330	15,433	154,330
British Columbia	7,644	3,822	27,006	122,800	1,228,002	126,622	1,255,008
Canada	201,935	96,538	402,334	138,233	1,382,332	234,771	1,784,666
1947							
Quebec	105,271	48,688	187,112	—	—	48,688	187,112
Ontario	—	—	—	15,931	159,310	15,931	159,310
British Columbia	72,993	33,949	244,315	123,213	1,232,130	157,162	1,476,445
Canada	178,264	82,637	431,427	139,144	1,391,440	221,781	1,822,867
1948							
Quebec	145,205	69,463	263,330	—	—	69,463	263,330
Ontario	—	—	—	15,550	155,500	15,550	155,500
British Columbia	38,865	17,663	149,658	126,787	1,267,870	144,450	1,417,528
Canada	184,070	87,126	412,988	142,337	1,423,370	229,463	1,836,358

TABLE 345. Available Data on the Consumption of Sulphur (Brimstone), 1945-1948

Industry	1945	1946	1947	1948
	(Tons of 2,000 pounds)			
Pulp and paper	203,522	226,296	253,423	260,912
Heavy chemicals	53,689	45,346	63,265	60,882
Rubber goods	1,496	1,446	2,165	2,154
Explosives	1,131	1,461	1,496	1,759
Insecticides	1,244	1,297	1,545	1,293
Adhesives	75	64	93	61
Starch	253	208	267	227
Fruit and vegetable preparations	123	119	38	26
Sugar refining	130	128	127	107
Petroleum refining	51	68	127	168
Matches	89	83	92	74
Miscellaneous	600	195	180	480
Total Accounted For	262,403	276,711	322,818	328,143

TABLE 346. Imports of Sulphur, 1939-1948

Year	Tons	\$	Year	Tons	\$
1939	152,216	2,453,836	1944	235,955	3,875,649
1940	215,597	3,628,348	1945	248,846	4,063,324
1941	235,271	3,920,184	1946	273,502	4,271,081
1942	290,121	4,680,672	1947	361,424	5,466,201
1943	218,527	3,524,006	1948	354,622	5,528,740

VOLCANIC DUST

Volcanic dust (pumice or pumice dust) is a natural glass or silicate, atomized by volcanic explosions and thrown into the air in great clouds which ultimately settle, forming beds of varying thickness, often hundreds of miles from its source. In many instances the dust has been washed down from higher levels and redeposited by the agency of waters, in which case the beds are stratified and mixed with foreign substances. It consists of aluminum silicate (80 to 90 per cent) and of oxides and silicates of iron, sodium, magnesium, calcium, etc.

During 1924 to 1933 the annual production varied from 30 to 485 tons. There has been no production in recent years. The last recorded shipments were 50 tons in 1943.

Volcanic dust deposits have been found in Alberta, Saskatchewan and British Columbia.

Pumice dust is used for concrete aggregate, acoustic plaster, cleansing compounds, paint fillers, absorbents, etc.

CHAPTER NINE

CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS

Grouped in this Chapter are those industries producing structural materials from non-metallic minerals, rocks and clays of Canadian origin. These industries include those firms engaged in the production of Clay Products, Portland Cement, Lime, Sand, Gravel and Stone. The combined value of these materials produced in Canada during 1948 totalled \$107,843,785 compared with \$86,497,403 in 1947. Of the 1948 output, Quebec contributed \$40,586,693 and Ontario \$35,943,547 or 37.6 per cent and 33.3 per cent respectively. In order of importance, lesser amounts were also produced in British Columbia, Alberta, Manitoba, Nova Scotia, and New Brunswick.

The quality of structural materials produced in Canada compares favourably with that of other countries. Most of the larger plants producing cement, clay products, lime, stone and sand and gravel are equipped with modern machinery and the Dominion is endowed with practically inexhaustible deposits of most primary materials required in any building or construction project of the future.

There has been an increasing consumption of stone and lime for other than building purposes. This has been particularly evident in recent years and is the result of expansion in certain industries where these materials are utilized in various chemical processes. Shipments of stone and lime for these purposes are classified, for convenience, with data relating to production of these same materials for structural purposes. However, statistics pertaining to their consumption for industrial purposes are segregated in the following tables.

TABLE 347. Gross Value of Clay Products and Other Structural Materials Produced, by Provinces, 1944-1948

Province	1944	1945	1946	1947	1948
	\$	\$	\$	\$	\$
Nova Scotia.....	1,081,805	1,310,214	1,671,504	2,724,003	3,419,820
New Brunswick.....	1,644,047	1,497,688	1,833,508	2,417,268	2,478,291
Quebec.....	15,085,337	17,628,154	23,362,072	30,034,587	40,586,693
Ontario.....	16,088,455	17,872,222	24,917,679	31,028,899	35,943,547
Manitoba.....	2,648,430	3,350,115	4,405,157	4,950,548	6,304,870
Saskatchewan.....	864,082	834,564	1,322,107	1,632,625	1,426,836
Alberta.....	3,149,234	3,398,323	4,886,591	4,837,385	7,336,524
British Columbia.....	3,573,857	3,911,254	5,570,349	8,872,088	10,347,204
Canada—Gross value.....	44,135,247	49,802,534	67,968,967	86,497,403	107,843,785
Net value.....	32,916,190	37,885,652	51,848,199	66,989,837	83,451,064

Note. For statistics relating to employment, etc., in these combined industries, see Chapter 1.

Gross value includes cement containers.

Net value—Deductions made for fuel, electricity, process supplies and containers.

THE CEMENT MANUFACTURING INDUSTRY

Production of cement in Canada during 1948 exceeded all previous annual records both in quantity and total value of products. During the year a total of 14,127,123 barrels valued at \$28,264,987 were sold or used by the producers, an increase of 18.3 per cent in quantity and 31.9 per cent in value over the 1947 shipments of 11,936,245 barrels worth \$21,968,909. Shipments by provinces were: Quebec, 6,517,031 barrels; Ontario, 3,660,756 barrels; Manitoba, 1,697,042 barrels; Alberta, 1,224,313 barrels and British Columbia, 1,027,981 barrels.

The same 8 plants were in operation during 1948 as in the previous year. The Canada Cement Company Limited had works at Hull and Montreal East in Quebec, at Port Colborne and Belleville in Ontario, at Fort Whyte in Manitoba, and at Exshaw in Alberta; the St. Mary's Cement Co. Limited operated a mill at St. Mary's, Ontario, and the British Columbia Cement Co. Limited had a plant at Bamberton, British Columbia. The plant at Exshaw, Alberta, was expanded to double its previous capacity. Alterations to permit increased production at Belleville, Ontario, are expected to be completed in May, 1949. The industry has 20 kilns with a total rated capacity of 41,000 tons per 24 hours.

Raw materials used in 1948 included 3,449,947 tons of limestone, 119,821 tons of gypsum, 277,178 tons of clay, 9,182 tons of iron oxide, 47,749 tons of silica sand and 78,377 tons of shale.

The cement industry employed an average of 1,723 persons and paid \$4,356,086 in wages and salaries. Raw materials, process supplies and containers cost \$5,699,042 and fuel and electricity \$7,158,156. The gross value of shipments f.o.b. works, including containers, was \$30,561,717.

Imports of Portland cement into Canada amounted to 1,120,671 barrels valued at \$3,995,173 in 1948, a decrease of 10.2 per cent in quantity from 1,248,625 barrels in the previous year. Exports amounted to 72,999 barrels valued at \$200,575. The apparent consumption of cement in Canada was 15,174,795 barrels in 1948.

TABLE 348. Principal Statistics for the Cement Manufacturing Industry, 1939-1948

Year	Number of plants	Number of employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies, materials and containers ¹	Gross value of products sold during year including containers (f.o.b. works)
			\$	\$	\$	\$
1939.....	8	1,001	1,297,542	1,705,981	1,372,238	9,351,391
1940.....	8	1,052	1,515,766	2,347,730	1,943,491	13,006,643
1941.....	8	1,235	1,860,931	2,897,383	2,146,825	14,323,372
1942.....	8	1,241	2,059,337	3,127,264	2,287,223	15,628,403
1943.....	8	1,209	2,154,218	3,089,380	2,467,709	12,709,852
1944.....	8	1,207	2,254,775	3,197,955	2,566,432	12,646,741
1945.....	8	1,317	2,398,117	3,210,929	2,794,676	15,422,031
1946.....	8	1,524	2,929,020	4,487,496	4,306,467	21,724,021
1947.....	8	1,650	3,679,446	5,777,917	4,354,657	23,582,011
1948.....	8	1,723	4,356,086	7,158,156	5,699,042	30,561,717

1. Includes both process supplies and containers for 1939 to 1942 inclusive; and process supplies, containers and raw materials for later years.

TABLE 349. Producers' Shipments of Cement, by Provinces, 1946-1948

Province	1946		1947		1948	
	Barrels	Value ¹	Barrels	Value ¹	Barrels	Value ¹
		\$		\$		\$
Quebec.....	5,046,166	7,910,548	5,453,407	9,351,477	6,517,031	12,306,243
Ontario.....	3,677,695	6,025,503	3,529,438	6,219,993	3,660,756	7,076,317
Manitoba.....	1,254,946	2,811,264	1,352,109	3,009,157	1,697,042	3,919,145
Alberta.....	809,721	1,635,222	737,551	1,491,510	1,224,313	2,521,978
British Columbia.....	771,955	1,739,966	863,740	1,896,772	1,027,981	2,441,304
Canada.....	11,560,483	20,122,503	11,936,245	21,968,909	14,127,123	28,264,987

1. Does not include the value of containers.

TABLE 350. Production, Imports and Exports of Portland Cement, 1947 and 1948

	1947		1948	
	Barrels ¹	Value	Barrels ¹	Value
		\$		\$
Output	12,202,696	-	14,003,656	-
Shipments (sold or used by producers)	11,936,245	21,968,909	14,127,123	28,264,987
Stocks on hand December 31.....	735,972	-	612,505	-
IMPORTS:				
Portland cement and hydraulic or water lime.....	1,248,625	3,843,652	1,120,671	3,995,173
Portland cement clinker (white).....	28,462	64,054	33,998	92,195
Manufactures, n.o.p.	-	46,458	-	69,509
EXPORTS:				
Portland cement.....	88,030	198,354	72,999	200,575
Apparent consumption	13,096,840 ²	-	15,174,795 ²	-

1. 1 barrel - 350 pounds.

2. Exclusive of clinker imported.

TABLE 351. Producers' Shipments and Apparent Consumption of Cement, 1939-1948

Year	Shipments (Sold or Used)		Apparent Consumption ¹ in Canada
	Barrels	\$	Barrels
1939.....	5,731,264	8,511,211	5,591,328
1940.....	7,559,648	11,775,345	7,272,886
1941.....	8,368,711	13,063,588	8,069,824
1942.....	9,126,041	14,365,237	8,878,481
1943.....	7,302,289	11,599,033	7,148,265
1944.....	7,190,851	11,621,372	6,994,406
1945.....	8,471,679	14,246,480	8,222,388
1946.....	11,560,483	20,122,503	11,796,170
1947.....	11,936,245	21,968,909	13,096,840
1948.....	14,127,123	28,264,987	15,180,509

1. Shipments plus imports less exports.

TABLE 352. Producers' Shipments of Cement, by Months, 1947-1948

Month	1947	1948	Month	1947	1948
	(Barrels)			(Barrels)	
January.....	403,300	500,317	July.....	1,249,686	1,420,151
February	421,647	647,179	August.....	1,173,570	1,434,896
March.....	809,841	1,072,489	September.....	1,235,905	1,481,347
April.....	1,060,391	1,268,018	October.....	1,309,748	1,377,554
May.....	1,291,869	1,413,959	November.....	1,071,626	1,311,432
June.....	1,276,799	1,455,273	December.....	631,863	744,508
			Total	11,936,245	14,127,123

TABLE 353. Specified Materials Used in Canadian Cement Plants, 1939-1948

Year	Shale	Limestone	Gypsum	Silica sand	Clay	Iron oxides ¹
	(Tons)					
1939.....	27,241	1,379,858	31,492	7,942	105,982	16
1940.....	18,347	1,765,944	38,903	15,298	144,152	170
1941.....	26,837	2,086,781	49,031	16,110	185,954	614
1942.....	30,498	2,155,750	49,816	20,711	188,202	2,094
1943.....	75,460 ²	1,918,742	47,034	19,473	165,345	1,502
1944.....	74,303	1,865,597	42,672	23,942	173,728	3,924
1945.....	70,600	1,849,258	45,883	29,424	161,980	3,197
1946 ³	99,355	2,525,653	65,431	31,222	227,645	3,862
1947 ³	43,154	3,057,675	81,946	36,223	279,635	5,145
1948 ³	78,377	3,449,947	119,821	47,749	277,178	9,182

1. Produced from iron pyrites by the chemical industry.

2. Prior to 1943 shale consumed in British Columbia plants was included with limestone.

3. Value of these materials purchased totalled \$505,994 in 1946; \$651,521 in 1947, and \$990,577 in 1948.

TABLE 354. Coal Used in Portland Cement Plants, 1939-1948

Year	Canadian		Foreign	
	Tons	\$	Tons	\$
1939.....	190,538	1,010,071	16,141	82,336
1940.....	185,325	1,108,287	85,885	513,224
1941.....	125,740	772,829	203,905	1,331,448
1942.....	156,544	1,003,490	192,105	1,305,383
1943.....	98,135	595,385	225,741	1,664,546
1944.....	108,292	731,706	219,802	1,634,690
1945.....	121,299	823,988	206,995	1,566,420
1946.....	172,081	1,237,718	289,046	2,233,402
1947.....	188,457	1,485,039	371,849	3,130,050
1948.....	328,422	2,965,986	300,191	2,842,549

TABLE 355. Number and Capacity of Kilns in Portland Cement Plants, 1939-1948

Year	Total kilns		Kilns in use during the year	
	Number	Total capacity barrels per 24 hours	Number	Total capacity barrels per 24 hours
1939.....	21	35,000	11	23,700
1940.....	21	35,000	13	27,950
1941.....	20	33,050	16	30,350
1942.....	19	34,650	17	32,450
1943.....	19	33,750	15	30,296
1944.....	19	33,250	15	30,150
1945.....	19	33,250	15	30,150
1946.....	18	33,550	16	31,640
1947.....	19	38,000	19	38,000
1948.....	20	41,000	19	40,300

TABLE 356. Selling Price per Barrel of Canadian Cement, f.o.b. Works, 1939-1948

Year	High	Low	Year	High	Low
	\$	\$		\$	\$
1939.....	2.35	1.25	1944.....	2.70	1.25
1940.....	2.35	1.32	1945.....	2.70	1.38
1941.....	2.70	1.25	1946.....	2.85	1.30
1942.....	2.70	1.25	1947.....	3.10	1.26
1943.....	2.70	1.25	1948.....	3.30	1.30

TABLE 357. Employees, Salaries and Wages in the Cement Manufacturing Industry, 1942-1948

Year	Number of Employees					Salaries	Wages	Total Salaries and Wages
	On Salaries		On Wages		Total			
	Male	Female	Male	Female				
						\$	\$	\$
1942.....	79	10	1,152	—	1,241	200,779	1,858,558	2,059,337
1943.....	75	16	1,091	27	1,209	215,137	1,939,081	2,154,218
1944.....	76	16	1,066	49	1,207	229,490	2,025,285	2,254,775
1945.....	87	15	1,159	56	1,317	248,365	2,149,752	2,398,117
	Administration		Workmen		Total	Administrators' earnings	Workmen's earnings	Total earnings
1946.....	97	8	1,400	19	1,524	246,992	2,682,028	2,929,020
1947.....	107	9	1,518	16	1,650	328,748	3,350,698	3,679,446
1948.....	114	9	1,589	11	1,723	346,453	4,009,633	4,356,086

TABLE 358. Number of Workmen in the Cement Manufacturing Industry, by Months, 1947 and 1948

Month	1947			1948		
	Quarry	Mill		Quarry	Mill	
	Male	Male	Female	Male	Male	Female
January.....	194	1,256	17	217	1,330	11
February.....	192	1,249	17	224	1,350	10
March.....	199	1,247	17	221	1,373	10
April.....	221	1,238	17	220	1,363	10
May.....	214	1,262	17	217	1,400	11
June.....	225	1,280	16	213	1,396	11
July.....	224	1,346	17	202	1,404	12
August.....	220	1,369	17	213	1,401	11
September.....	228	1,308	15	207	1,398	11
October.....	237	1,357	15	203	1,387	11
November.....	231	1,349	15	190	1,386	11
December.....	225	1,361	15	188	1,362	10
Average.....	218	1,300	16	211	1,378	11

THE CLAY AND CLAY PRODUCTS INDUSTRY

The industrial clays of Canada may be classified as common clays, stoneware clays, fire-clays and china clays. Statistically, the ceramic industry of Canada is conveniently classified into two divisions: (1) Production from domestic clays, which includes the production of building brick, structural tile, drain tile, roofing tile, stoneware, sewer pipe, pottery and refractories, and (2) production from imported clays, which includes the manufacture of electrical porcelains, sanitary ware, sewer pipe, tableware, pottery, ceramic floor and wall tile, and various kinds of fireclay refractories. Data relating to the production of glass, cement and artificial abrasives are contained in separate reports.

A total of 155 plants operated in the domestic and imported clay products industries in Canada during 1948. These two industries provided employment for 6,034 persons during the year; their earnings totalled \$12,302,723. The combined production in 1948 was valued at \$29,992,782 compared with \$24,090,665 in 1947.

Production from Domestic Clays

The gross value of producers' sales of domestic clays and products made from same totalled \$17,629,048 in 1948 compared with \$14,486,189 in the preceding year. Products of domestic clay were made in eight provinces. Ontario's production was valued at \$6,563,754; Quebec, \$5,123,908; Alberta, \$2,055,738; British Columbia, \$1,392,417; the balance of the total value was contributed by the remaining provinces.

The industry employed 3,746 persons to whom \$7,505,765 was distributed in wages and salaries. The cost of fuel and electricity amounted to \$3,481,413 and process supplies used were valued at \$545,190.

Sales of building brick in 1948 amounted to \$9,597,463 for 320,693 M pieces compared with \$7,930,714 for 295,446 M pieces in 1947. The sewer pipe and drain tile sales were \$3,449,294; structural tile, \$2,605,050; pottery, \$921,970; bentonite, \$339,713 and firebrick, fireclay blocks and fireclay, \$689,644.

TABLE 359. Principal Statistics for the Domestic Clay Products Industry, 1939-1948

Year	Establishments	Employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies	Gross value of products sold during year (f.o.b. works)
	No.	No.	\$	\$	\$	\$
1939.....	149	2,165	2,161,688	998,683	108,815	5,151,236
1940.....	143	2,557	2,675,251	1,282,593	139,635	6,344,547
1941.....	142	2,881	3,227,785	1,561,326	207,247	7,575,336
1942.....	124	2,523	3,073,011	1,292,373	158,860	7,081,723
1943.....	105	2,173	2,909,841	1,157,471	104,336	6,608,193
1944.....	110	2,247	3,176,804	1,357,313	161,189	6,997,425
1945.....	106	2,688	3,828,206	1,780,426	194,257	8,913,092
1946.....	119	3,437	5,115,962	2,365,552	278,125	12,207,367
1947.....	124	3,552	6,204,705	2,832,416	386,840	14,486,189
1948.....	117	3,746	7,505,765	3,481,413	545,190	17,629,048

TABLE 360. Producers' Sales of Products from Domestic Clays, 1939-1948

Year	\$	Year	\$
1939.....	5,151,236	1944.....	6,997,425
1940.....	6,344,547	1945.....	8,913,092
1941.....	7,575,336	1946.....	12,207,367
1942.....	7,081,723	1947.....	14,486,189
1943.....	6,608,193	1948.....	17,629,048

TABLE 361. Producers' Sales of Domestic Clay and Domestic Clay Products, 1947 and 1948

Product	Unit of measure	Sales or Shipments			
		1947		1948	
		Quantity	\$	Quantity	\$
Clay:					
Pentonite.....	—	—	258,327	—	339,713
Fireclay.....	ton	3,960	33,907	10,206	59,317
Other clay.....	ton	21,568	41,248	32,308	37,794
Fireclay blocks and shapes.....	—	—	274,783	—	318,810
Firebrick.....	M	3,780	250,668	4,111	311,517
Brick:					
Soft mud process:					
Face.....	M	11,672	254,336	17,544	647,957
Common.....	M	20,583	459,405	28,506	730,478
Stiff mud process (wire cut):					
Face.....	M	107,504	3,356,742	113,713	3,830,323
Common.....	M	66,634	1,483,868	63,303	1,517,208
Dry press:					
Face.....	M	50,350	1,476,529	46,587	1,589,688
Common.....	M	38,548	895,395	50,349	1,264,051
Fancy or ornamental brick (including special shapes, embossed and enameled brick).....	M	1	61	3	184
Sewer brick.....	M	154	4,376	688	17,574
Paving brick.....	M	—	13	179	13,831
Structural tile:					
Hollow blocks (including fireproofing and load-bearing tile).....	ton	149,733	1,950,098	166,195	2,364,949
Floor tile (quarries).....	—	—	56,845	—	89,719
Draig tile.....	M	19,725	843,855	22,627	1,082,109
Sewer pipe.....	—	—	1,527,578	—	1,762,734
Flue linings.....	—	—	358,879	—	604,451
Pottery, glazed or unglazed (including coarse earthenware, sanitaryware, stoneware, flower pots, and all other pottery).....	—	—	853,440	—	921,970
Other products.....	—	—	105,834	—	124,671
Total.....	—	—	14,486,189	—	17,629,048

In addition to the clays recorded in the above table, there were 277,178 tons of ordinary clay consumed in Canada during 1948 in the production of Portland cement; the corresponding consumption in 1947 was 279,635 tons. Also consumed by the Canadian cement industry in 1948 were 78,377 tons of shale.

TABLE 362. Producers' Sales of Products From Domestic Clays, by Provinces, 1946-1948

Province	1946	1947	1948
	(dollars)		
Nova Scotia.....	671,466	752,126	1,031,685
New Brunswick.....	336,971	381,184	434,772
Quebec.....	3,457,168	4,257,423	5,123,908
Ontario.....	4,288,780	5,289,528	6,563,754
Manitoba.....	372,920	392,518	517,181
Saskatchewan.....	411,446	495,016	509,593
Alberta.....	1,808,971	1,771,250	2,055,738
British Columbia.....	859,645	1,147,144	1,392,417
Canada.....	12,207,367	14,486,189	17,629,048

TABLE 363. Producers' Sales of Clay Building Brick, 1939-1948

Year	Quantity	\$	Average value per M ¹	Year	Quantity	\$	Average value per M ¹
	M		\$		M		\$
1939.....	165,024	2,676,634	16.22	1944.....	154,785	3,155,380	20.38
1940.....	191,213	3,277,187	17.14	1945.....	200,241	4,566,179	22.82
1941.....	208,871	3,765,493	18.00	1946.....	272,389	6,627,517	24.33
1942.....	169,317	3,018,375	17.83	1947.....	295,446	7,930,714	26.84
1943.....	138,678	2,808,764	20.25	1948.....	320,693	9,597,463	29.93

1. Based on shipments of all grades and the value per M should be interpreted as the average value of pressed, common and other varieties together and not the value of any one particular type of brick.

TABLE 364. Producers' Sales of Clay Building Brick, by Provinces, 1946-1948

Province	1946		1947		1948	
	M	\$	M	\$	M	\$
Nova Scotia.....	8,167	160,492	7,890	177,015	10,512	263,443
New Brunswick.....	9,560	223,688	12,941	312,695	14,365	358,530
Quebec.....	113,695	2,642,891	122,002	3,253,058	129,646	3,740,165
Ontario.....	104,078	2,800,236	111,608	3,206,298	120,715	4,075,413
Manitoba.....	6,384	165,348	5,282	138,732	7,340	181,178
Saskatchewan.....	4,148	92,186	4,048	117,265	3,823	100,225
Alberta.....	21,360	377,573	26,088	537,142	27,896	637,941
British Columbia.....	4,997	165,103	5,587	188,509	6,396	240,568
Canada.....	272,389	6,627,517	295,446	7,930,714	320,693	9,597,463
Average value per M.....	-	24.33	-	26.84	-	29.93

Includes fancy and sewer brick.

TABLE 365. Producers' Sales of Drain Tile and Sewer Pipe Made from Domestic Clays, 1939-1948

Year	Value	Year	Value
	\$		\$
1939.....	1,167,181	1944.....	1,390,457
1940.....	1,430,154	1945.....	1,674,016
1941.....	1,755,753	1946.....	2,032,403
1942.....	1,721,580	1947.....	2,730,312
1943.....	1,507,223	1948.....	3,449,294

Includes value of copings, flue linings, etc.

TABLE 366. Producers' Sales of Drain Tile and Sewer Pipe Made from Domestic Clays, by Provinces, 1946-1948

Province	1946	1947	1948
		(dollars)	
Nova Scotia.....	315,661	363,317	491,661
New Brunswick.....	2,638	4,259	399
Quebec.....	212,646	315,409	389,881
Ontario.....	846,961	1,162,548	1,477,785
Manitoba.....	-	-	-
Saskatchewan.....	7,500	4,725	9,363
Alberta.....	381,133	415,984	482,664
British Columbia.....	263,864	464,070	597,541
Canada.....	2,632,403	2,730,312	3,449,294

Includes value of copings, flue linings, etc.

TABLE 367. Producers' Sales of Fireclay, Fireclay Blocks and Shapes, and Firebrick made from Domestic Clay, 1939-1948

Year	Fireclay		Fireclay blocks and shapes	Firebrick	
	Short tons	\$	\$	M	\$
1939.....	3,785	22,504	95,256	2,331	119,346
1940.....	4,881	30,564	85,127	3,167	165,525
1941.....	5,431	35,475	190,497	3,643	183,897
1942.....	5,601	40,722	210,246	3,816	197,830
1943.....	5,653	42,122	256,655	3,644	192,618
1944.....	7,630	38,433	221,251	3,180	164,837
1945.....	4,266	31,416	225,275	3,466	186,651
1946.....	4,696	30,607	222,430	3,367	205,849
1947.....	3,960	33,907	274,783	3,780	250,668
1948.....	10,206	59,317	318,810	4,111	311,517

Note. Firebrick and fireclay blocks and shapes are made also from imported clays; see table 388.

TABLE 368. Producers' Sales of Fireclay Blocks and Shapes and Firebrick made from Domestic Clays, by Provinces, 1948

Province	Fireclay		Fireclay blocks and shapes	Firebrick	
	Short tons	\$	\$	M	\$
Nova Scotia.....	3,431	12,699	-	-	-
Saskatchewan.....	1,102	13,696	237,953	-	-
British Columbia.....	5,673	32,922	80,857	4,111	311,517
Canada.....	10,206	59,317	318,810	4,111	311,517

TABLE 369. Producers' Sales of Pottery made from Domestic Clays, 1939-1948

Year	Value	Year	Value
	\$		\$
1939.....	282,712	1944.....	838,544
1940.....	474,452	1945.....	930,567
1941.....	502,212	1946.....	1,195,478
1942.....	646,088	1947.....	853,440
1943.....	701,144	1948.....	921,970

TABLE 370. Producers' Sales of Pottery made from Domestic Clays, by Provinces, 1946-1948

Province	1946	1947	1948
	(dollars)		
New Brunswick.....	68,929	52,051	65,844
Quebec.....	157,413	98,705	62,045
Ontario.....	77,800	87,378	84,294
Alberta.....	888,525	611,830	704,649
British Columbia.....	2,811	3,476	5,138
Canada.....	1,195,478	853,440	921,970

TABLE 371. Producers' Sales of Structural Tile Made from Domestic Clays, 1939-1948

Year	Hollow blocks ¹		Roofing tile		Floor tile (Quarries)	
	Short tons	\$	Number	\$	Sq. ft.	-\$
1939	86,120	714,291	148,291	4,964	90,812	15,233
1940	105,073	788,478	41,772	1,839	-	13,631
1941	117,530	1,063,120	-	750	-	21,349
1942	109,905	1,082,573	-	32	-	23,705
1943	84,469	819,535	-	827	-	26,949
1944	87,820	811,558	-	-	212,805	43,817
1945	94,244	998,210	-	-	197,164	46,365
1946	129,694	1,453,549	-	97	205,950	50,699
1947	149,733	1,950,098	-	-	204,977	56,845
1948	166,195	2,364,949	-	-	240,101	89,719

1. Including fireproofing and load-bearing tile.

TABLE 372. Producers' Sales of Structural Tile Made from Domestic Clays, by Provinces, 1948

Province	Hollow blocks ¹		Floor tile (Quarries)	
	Short tons	\$	Sq. ft.	\$
Nova Scotia.....	23,927	263,882	-	-
New Brunswick.....	943	9,999	-	-
Quebec.....	56,476	875,601	-	-
Ontario.....	50,885	766,242	240,101	89,719
Manitoba.....	-	-	-	-
Saskatchewan.....	6,901	108,188	-	-
Alberta.....	19,706	226,774	-	-
British Columbia.....	7,357	114,263	-	-
Canada.....	166,195	2,364,949	240,101	89,719

1. Including fireproofing and load-bearing tile.

TABLE 373. Producers' Sales of Products Made from Canadian Clays, by Months, 1947 and 1948 (Unrevised monthly data)

Month	Building brick		Structural tile ¹		Drain tile		Sewer pipe	Fireclay blocks and shapes	Pottery ²	Other clay products ³	Total
	M	\$	Ton	\$	M	\$					
1947							\$	\$	\$	\$	\$
January.....	17,433	432,358	9,293	108,239	837	31,289	92,239	18,035	115,544	65,562	863,266
February.....	16,876	445,666	8,458	112,508	760	31,056	113,239	8,779	114,333	49,874	875,455
March.....	19,347	510,626	10,772	148,365	498	23,030	113,871	21,526	128,405	60,855	1,006,678
April.....	19,051	514,236	12,471	164,744	479	24,861	117,462	23,202	95,462	59,840	999,807
May.....	23,224	643,680	12,370	168,476	1,567	62,688	187,299	20,556	105,772	39,845	1,228,316
June.....	24,039	659,723	16,568	189,676	1,335	56,338	142,654	18,940	89,386	50,369	1,207,086
July.....	27,748	775,549	13,252	190,733	1,445	65,666	145,061	22,517	78,587	62,941	1,341,054
August.....	25,098	695,912	13,169	171,134	1,542	62,188	145,186	39,723	70,621	67,408	1,252,172
September.....	28,440	754,445	15,568	193,277	1,742	71,862	164,548	31,250	66,924	50,924	1,333,230
October.....	29,148	804,802	15,042	210,092	2,408	100,770	148,406	26,052	53,852	70,088	1,414,062
November.....	24,139	671,351	14,025	189,876	2,559	120,484	157,052	31,317	74,664	57,718	1,302,465
December.....	23,563	658,998	11,914	163,402	1,341	60,122	119,863	16,371	82,395	50,139	1,150,390
Total.....	278,156	7,566,449	152,902	2,010,522	16,513	710,354	1,646,880	278,268	1,075,945	685,563	13,973,981
1948											
January.....	16,810	490,252	12,384	166,981	821	34,809	136,282	33,637	61,780	58,446	982,187
February.....	17,190	499,627	8,674	134,259	630	28,744	135,333	16,037	85,230	51,503	949,733
March.....	21,067	611,030	9,891	153,503	471	23,763	164,663	22,791	114,065	58,501	1,148,346
April.....	23,478	699,112	10,387	158,739	514	28,331	182,402	16,754	121,942	71,036	1,278,316
May.....	25,100	742,073	12,684	200,422	1,371	63,804	179,520	30,041	102,698	64,803	1,383,361
June.....	28,305	860,144	15,594	243,217	2,115	99,260	202,273	25,624	104,518	79,049	1,624,518
July.....	29,439	902,460	13,876	219,541	1,969	95,049	162,983	29,468	103,180	71,775	1,558,676
August.....	28,279	872,209	14,438	223,257	2,111	105,248	196,089	26,779	128,696	84,472	1,733,697
September.....	30,981	971,367	14,375	221,046	2,154	106,632	209,358	26,105	122,898	76,240	1,737,841
October.....	29,999	954,607	15,864	250,783	1,946	101,865	206,340	30,704	120,695	79,848	1,744,840
November.....	25,477	832,168	13,904	212,803	1,249	63,747	180,214	31,748	85,048	65,906	1,471,634
Total.....	306,524	9,407,400	156,522	2,408,563	17,282	842,305	2,156,875	319,519	1,272,168	827,645	17,234,475

1. Includes floor tile.

2. Includes flower pots, stoneware, etc.

3. Includes firebrick, fireclay, china clay, etc.

TABLE 374. Producers' Sales of Bentonite and Kaolin, by Provinces, 1939-1948

Year	Bentonite								Kaolin ¹	
	Manitoba		Alberta		British Columbia		Canada		Tons	\$
	Tons	\$	Tons	\$	Tons	\$	Tons	\$		
1939.....	99	591	889	2,850	—	—	988	3,441	—	—
1940.....	710	2,023	714	2,240	45	225	1,469	4,488	—	—
1941.....	760	1,330	1,317	5,882	95	618	2,172	7,830	2	30
1942.....	660	38,800	956	5,404	—	—	1,616	44,204	408	6,130
1943.....	—	110,428	—	5,262	—	1,357	2	117,047	93	1,531
1944.....	—	160,268	—	2,076	—	1,504	2	163,848	424	5,758
1945.....	—	169,551	—	1,248	—	—	2	170,799	446	3,771
1946.....	—	207,572	—	4,253	—	—	2	211,825	821	5,775
1947.....	—	253,786	—	4,541	—	—	2	258,327	—	—
1948.....	—	336,003	—	3,710	—	—	2	339,713	—	—

1. All from Quebec.

2. Quantity not available for publication.

TABLE 375. Clays Used in Canada in the Manufacture of Soaps and Washing Compounds and in the Petroleum Products Industry, 1939-1948

Year	Petroleum Products Industry		Soaps and Washing Compounds	
	Pounds	\$	Pounds	\$
1939.....	19,814,473	304,214	1,586,163	30,924
1940.....	23,828,660	406,185	1,651,471	40,695
1941.....	30,155,750	571,010	1,486,000	39,332
1942.....	24,162,091	528,350	2,116,000	66,963
1943.....	25,390,653	601,283	2,480,000	84,646
1944.....	27,569,500	646,708	2,398,351	83,189
1945.....	28,604,000	685,761	2,952,000	101,610
1946.....	25,623,347	570,819	2,978,000	86,577
1947.....	26,492,000	579,819	2,222,000	68,773
1948.....	29,522,000	666,079	2,236,000	76,960

TABLE 376. China Clay (Kaolin) Used in the Manufacture of Paper, 1939-1948

Year	Tons	Value	Year	Tons	Value
		\$			\$
1939.....	32,769	430,092	1944.....	47,995	987,488
1940.....	36,931	558,659	1945.....	45,571	954,659
1941.....	32,844	588,585	1946.....	38,379	788,472
1942.....	28,734	578,190	1947.....	41,517	954,034
1943.....	26,374	561,285	1948.....	46,655	1,098,742

TABLE 377. Clays and Earths Used in Canadian Rubber Goods Industry, 1939-1948

Year	Tons	Value	Year	Tons	Value
		\$			\$
1939.....	3,438	80,745	1944.....	1,909	51,942
1940.....	3,586	90,867	1945.....	3,953	102,182
1941.....	4,059	101,441	1946.....	4,333	107,710
1942.....	1,523	37,186	1947.....	5,495	140,100
1943.....	1,257	35,266	1948.....	5,121	147,316

TABLE 378. Firebrick, Fireclay and Cupola Blocks used in the Manufacture of Iron and Steel and their Products, 1939-1948

Year	Cost of works	Year	Cost of works
	\$		\$
1939.....	939,495	1944.....	3,195,751
1940.....	1,597,898	1945.....	3,088,142
1941.....	2,581,813	1946.....	2,280,172
1942.....	3,268,181	1947.....	3,054,353
1943.....	3,717,826	1948.....	4,088,719

TABLE 379. Fuller's Earth and Filtering Earths used in Specified Canadian Industries, 1939-1948

Year	Sugar refineries		Vegetable oil mills	
	Pounds	\$	Pounds	\$
1939.....	4,819,811	105,711	207,105	10,166
1940.....	4,984,362	112,369	216,254	7,751
1941.....	5,333,131	133,129	275,290	19,604
1942.....	3,007,180	75,295	437,120	20,154
1943.....	3,451,142	89,075	484,380	20,302
1944.....	4,375,201	115,053	431,820	17,991
1945.....	3,983,325	102,961	643,179	24,824
1946.....	4,391,733	104,794	658,253	24,446
1947.....	4,980,232	141,885	734,407	28,581
1948.....	5,729,441	167,259	737,949	24,389

TABLE 380. Imports and Exports of Clay and Clay Products, 1947 and 1948

	1947		1948	
	Quantity	\$	Quantity	\$
IMPORTS				
Building brick..... ton	24,556	348,782	22,817	366,482
Building blocks and fireproofing tile.....	-	150,902	-	354,657
Clays:				
China..... cwt.	1,599,853	1,197,977	1,792,538	1,415,322
Fire..... cwt.	1,596,522	346,859	1,713,493	415,782
Zirconium silicate..... cwt.	178,050	24,629	166,005	23,474
Other clays, n.o.p.....	-	214,993	-	233,679
Activated clay to refine oil.....	-	242,483	-	272,586
Zirconium silicate.....	-	37,364	-	49,324
Zirconium oxide.....	-	62,241	-	34,420
Drain tile, unglazed.....	-	4,865	-	1,411
Drain, sewer pipe and earthenware fittings therefor, chimney linings or vents, chimney tops or inverted blocks, glazed or unglazed, n.o.p.	-	331,269	-	458,458
Tiles or blocks of earthenware or stone prepared for mosaic flooring...	-	168,649	-	195,328
Tiles, earthenware, for roofing purposes.....	-	8,539	-	4,815
Tiles, earthenware, n.o.p.....	-	620,117	-	910,477
Insulators, electric, porcelain.....	-	373,224	-	518,172
Pottery, chinaware and earthenware, n.o.p.....	-	10,717,129	-	12,488,933
Brick, fire, other, valued at not less than \$100 per M, rectangular shaped, the dimensions of each not to exceed 125 cubic inches for use exclusively in the construction or repair of a furnace, kiln, etc.....	-	175,122	-	178,933
Brick, fire, n.o.p., for use exclusively in the construction or repair of a furnace, kiln or other equipment of a manufacturing establishment (not made in Canada).....	-	2,292,200	-	2,629,644
Firebrick, n.o.p.....	-	2,000,254	-	2,153,763
Firebrick, chrome.....	-	600,435	-	700,683
Paving brick..... ton	3,563	37,496	4,858	62,518
Artificial teeth, not mounted.....	-	881,440	-	868,062
Baths, bathtubs, basins, laundry tubs, etc., of earthenware, cement or clay, n.o.p.....	-	1,248,393	-	2,650,075
Saggars.....	-	125,508	-	90,196
Crucibles, clay or sand.....	-	54,437	-	35,851
Other manufactures of clay, n.o.p.....	-	283,134	-	315,576
Grog for refractory materials.....	-	57,761	-	61,788
Total	-	22,106,202	-	27,512,409
EXPORTS				
Building brick..... M	4,186	114,089	4,860	140,246
Bricks, fire.....	-	331,721	-	539,497
Clay, manufactures of.....	-	99,987	-	63,121
Clays, unmanufactured.....	-	17,054	-	18,656
Earthenware.....	-	103,898	-	97,014
Porcelain insulators.....	-	516,151	-	649,598
Total	-	1,182,900	-	1,508,132

Note. "n.o.p." means "Not otherwise provided for" in the statistical classification.

TABLE 381. Employees, Salaries and Wages in the Domestic Clay Products Industry, 1942-1948

Year	Number of employees					Salaries	Wages	Total salaries and wages
	On salaries		On wages		Total employees			
	Male	Female	Male	Female				
1942.....	227	54	2,082	160	2,523	\$ 590,545	\$ 2,482,466	\$ 3,073,011
1943.....	190	58	1,718	207	2,173	570,300	2,339,541	2,909,841
1944.....	195	58	1,786	208	2,247	594,282	2,582,522	3,176,804
1945.....	225	66	2,188	209	2,688	652,758	3,175,448	3,828,206
	Administration		Workmen					
1946.....	138	41	2,987	271	3,347	385,133	4,730,829	5,115,962
1947.....	163	44	3,190	155	3,552	494,173	5,710,532	6,204,705
1948.....	160	36	3,403	147	3,746	574,250	6,931,515	7,505,765

TABLE 382. Workmen in the Domestic Clay Products Industry, by Months, 1947 and 1948

Month	1947				1948			
	Pit	Plant		Total	Pit	Plant		Total
	Male	Male	Female		Male	Male	Female	
January.....	137	2,506	183	2,826	126	2,673	134	2,933
February.....	134	2,487	187	2,808	115	2,703	133	2,951
March.....	137	2,553	176	2,866	151	2,763	138	3,052
April.....	165	2,798	189	3,152	179	2,961	147	3,287
May.....	236	3,130	175	3,541	243	3,379	166	3,788
June.....	276	3,285	177	3,738	256	3,546	152	3,954
July.....	285	3,352	153	3,790	265	3,596	188	4,049
August.....	289	3,292	148	3,729	276	3,607	149	4,032
September.....	276	3,184	98	3,558	247	3,461	136	3,844
October.....	261	3,092	101	3,454	215	3,349	144	3,708
November.....	211	3,034	129	3,374	182	3,198	130	3,510
December.....	143	2,820	142	3,105	139	3,031	143	3,313
Average.....	224	2,966	155	3,345	205	3,198	147	3,550

TABLE 383. Coal, Wood, Fuel Oil and Natural Gas Used, by Provinces, 1948

Province	Coal					Wood	Natural gas	Fuel oil
	Lignite	Bituminous		Anthracite				
		Canadian	Imported	United States	Other			
		tons		tons		cords	M cu. ft.	gallons
Nova Scotia	-	19,322	-	-	-	470	-	362,897
New Brunswick	-	8,550	-	-	-	3,074	-	-
Quebec.....	-	1,600	60,405	1,289	5	8,670	-	385,464
Ontario.....	-	125	97,813	179	-	13,904	3,129	470,485
Manitoba.....	-	1,605	-	-	-	1,667	-	320,226
Saskatchewan.....	8,364	3,123	1,309	-	-	-	-	36,019
Alberta.....	-	-	-	-	-	150	1,562,721	1,755
British Columbia.....	-	7,079	2,879	-	-	5,332	-	204,766
Canada.....	8,364	41,910	162,406	1,468	5	33,267	1,565,850	1,781,612

Products from Imported Clays

This industry covers the operations of Canadian plants which were occupied chiefly in making ceramic products from imported clays. Products made in these plants during 1948 included high tension insulators, vitreous china sanitaryware, china dinnerware, firebrick, sewer pipe, floor and wall tile, refractory cements, electrical porcelains, etc.

Thirty-eight plants reported in this group for 1948 and their output was valued at \$12,363,734 against last year's total of \$9,604,476 and the 1946 figure of \$7,073,371. The average number of workers was 2,288 and payments for salaries and wages totalled \$4,796,958. Fuel and electricity cost \$722,085 and materials for use in manufacturing processes cost \$2,825,026.

TABLE 384. Principal Statistics of the Imported Clay Products Industry, 1947 and 1948

	1947	1948
Number of plants.....	33	38
Average number of employees.....	2,150	2,288
Salaries and wages..... \$	3,817,551	4,796,958
Cost of fuel and electricity..... \$	545,952	722,085
Cost of materials at works..... \$	2,205,570	2,825,026
Gross selling value of products at works..... \$	9,604,476	12,363,734

Note. Profits or losses cannot be calculated from above figures as data are not available for general expense items, such as interest, rent, depreciation, taxes, insurance, advertising, etc.

TABLE 385. Employees, Salaries and Wages in the Imported Clay Products Industry, by Provinces, 1947 and 1948

Provinces	Average number of employees					Salaries	Wages	Total salaries and wages
	On salaries		On wages		Total			
	Male	Female	Male	Female				
1947						\$	\$	\$
Quebec.....	43	7	255	5	310	116,652	538,758	655,410
Ontario.....	131	60	1,075	424	1,690	493,641	2,478,442	2,972,083
Manitoba.....	3	1	93	53	150	5,533	184,525	190,058
Alberta.....								
British Columbia.....	177	68	1,423	482	2,150	615,826	3,201,725	3,817,551
Canada.....								
1948								
Quebec.....	40	11	287	13	351	138,695	689,726	828,421
Ontario.....	134	61	1,109	425	1,729	587,565	3,067,899	3,655,464
Manitoba.....	6	3	136	63	208	15,661	297,412	313,073
Alberta.....								
British Columbia.....	180	75	1,532	501	2,288	741,921	4,055,037	4,796,958
Canada.....								

TABLE 386. Products Made in the Imported Clay Products Industry, 1947 and 1948

Product	1947	1948
	Gross selling value at works	Gross selling value at works
	\$	\$
Firebrick and stove linings:		
Rigid.....	643,493	623,499
Plastic.....	424,222	413,367
High temperature cements.....	179,989	168,912
Electrical porcelains (high tension insulators and other electrical porcelains).....	3,372,015	4,445,890
Pottery:		
Artware.....	229,211	186,810
Pottery, other (sanitaryware, tableware, stoneware, etc.).....	3,327,972	4,936,100
All other products ¹	1,427,574	1,584,156
Total.....	9,604,476	12,363,734

1. Includes sewer pipe, floor tile, wall tile, flue lining, etc.

DOMINION BUREAU OF STATISTICS

TABLE 387. Materials Used in the Imported Clay Products Industry, 1947 and 1948

Material	1947		1948	
	Short tons	Total cost at works	Short tons	Total cost at works
		\$		\$
Imported clays:				
Ball clay.....	6,789	149,167	8,406	197,182
China clay.....	5,065	133,369	7,379	215,747
Fireclay.....	28,396	264,657	36,925	326,594
Saggar clay.....	393	8,723	887	18,785
Other imported clays.....	1,228	26,594	1,021	16,266
Canadian clays:				
China clay.....	9	584	227	14,734
Fireclay.....	52	1,389	47	1,700
Other Canadian clays.....	176	1,480	70	583
Firebrick, ground or broken (grog), including scrap brick.....	-	99,872	-	128,822
Feldspar.....	4,758	112,903	7,085	194,048
Silica sand and ground quartz.....	5,861	87,090	8,002	116,376
Sodium silicate.....	418	10,974	518	12,994
Talc.....	1,214	25,801	1,127	25,332
Other glazing materials.....	-	45,800	-	77,494
Insulator hardware.....	-	715,863	-	877,381
Shipping containers and packing materials.....	-	264,021	-	380,929
All other materials and process supplies.....	-	257,283	-	220,059
Total.....	-	2,205,570	-	2,825,026

TABLE 388. Total Production of Refractory Shapes, 1939-1948

Year	From domestic clays			Silica brick		Other ¹	Total
	Fireclay blocks and shapes	Firebrick				Rigid fire- brick and stove linings	
		M	\$	M	\$		
	\$					\$	\$
1939.....	95,256	2,331	119,346	2,493	124,807	640,376	979,785
1940.....	85,127	3,167	165,525	3,438	182,786	892,072	1,325,510
1941.....	190,497	3,643	183,897	4,111	238,433	1,186,805	1,798,632
1942.....	210,246	3,816	197,830	4,273	263,006	1,753,245	2,432,416
1943.....	262,154	3,644	192,618	4,165	295,505	1,461,484	2,211,761
1944.....	221,251	3,180	164,837	3,764	296,292	1,706,706	2,389,086
1945.....	225,275	3,466	186,651	4,208	317,263	1,484,301	2,213,490
1946.....	222,430	3,367	205,849	2,902	197,804	1,603,185	2,229,268
1947.....	274,783	3,780	250,668	3,094	303,406	1,779,341	2,608,198
1948.....	318,810	4,111	311,517	3,464	393,821	2,540,611	3,564,759

1. Includes shapes made from imported clays, from magnesite, etc., amounting to 54,800 tons in 1942, to 31,341 tons in 1943, to 29,400 tons in 1944, to 26,532 tons in 1945, to 26,832 tons in 1946, to 30,092 tons in 1947, and to 37,241 tons in 1948.

TABLE 389. Total Production of Refractory Cements and Plastics, 1939-1948

Year	Short tons	Selling value at works	Year	Short tons	Selling value at works
		\$			\$
1939.....	5,094	271,106	1944.....	17,383	980,365
1940.....	10,915	630,450	1945.....	18,308	1,061,786
1941.....	16,379	933,388	1946.....	18,166	1,071,224
1942.....	18,458	1,027,836	1947.....	21,118	1,283,580
1943.....	18,619	1,100,310	1948.....	27,996	1,439,618 ¹

1. Includes 1,487 tons of refractories not specified as to kind valued at \$123,356.

THE LIME INDUSTRY

During 1948 the production of lime in Canada reached a new high of 1,053,584 tons valued at \$10,655,062, representing increases of 7.8 per cent in tonnage and 24.7 per cent in value over the corresponding 1947 totals of 977,413 tons and \$8,542,507 respectively.

Of the 850,043 tons of quicklime produced, 785,082 tons were used for chemical and industrial purposes and 64,961 tons for building and other uses. Hydrated lime used in chemical and industrial plants amounted to 96,756 tons and the building and agricultural trades purchased 106,785 tons.

Stone used in the production of lime in Canada includes calcium, high calcium, and dolomitic varieties of limestone. It is estimated that 1,792,700 tons of limestone were burned for production of lime in 1948. In addition, a considerable tonnage of lime was recovered as a by-product from chemical plants.

The 42 active plants employed 1,121 persons. Wages and salaries amounted to \$2,459,299. Fuel and electricity cost \$3,117,667 and the cost of process supplies including containers totalled \$672,566.

In 1948 Canada exported 32,354 tons of lime valued at \$471,109, and imports totalled 23,878 tons worth \$219,485.

TABLE 390. Principal Statistics for the Lime Industry, 1939-1948

Year	Establishments	Employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies and containers	Gross value of products sold during year including containers (f.o.b. works)
	No.	No.	\$	\$	\$	\$
1939.....	59	937	849,468	944,502	107,510	4,003,514
1940.....	55	962	1,003,671	1,424,047	260,321	5,277,377 ¹
1941.....	50	1,105	1,321,571	2,008,142	188,387	6,357,941
1942.....	48	1,022	1,312,320	2,421,292	177,268	6,530,839
1943.....	45	898	1,408,393	1,747,012	177,470	6,832,992
1944.....	42	815	1,414,426	1,752,723	293,827	7,061,785 ¹
1945.....	44	856	1,473,829	1,644,077	424,412	6,732,348 ¹
1946.....	41	918	1,616,839	1,955,428	456,613	7,322,168 ¹
1947.....	42	1,038	2,052,801	2,513,144	573,635	8,850,023 ¹
1948.....	42	1,121	2,459,299	3,117,667	672,566	11,074,871 ¹

1. Years in which the value of containers is available.

TABLE 391. Production of Lime, 1939-1948

Year	Sold	Used by producer	Total value
	(Short tons)		\$
1939.....	288,252	263,957	4,003,514
1940.....	359,180	357,550	5,194,555
1941.....	451,361	409,524	6,357,941
1942.....	470,882	413,948	6,530,839
1943.....	484,177	423,591	6,832,992
1944.....	470,035	415,107	6,926,844
1945.....	416,030	416,223	6,525,038
1946.....	477,565	363,234	7,074,940
1947.....	538,267	439,146	8,542,507
1948.....	594,109	459,475	10,655,062

TABLE 392. Production of Lime, by Months, 1948

Month	Short tons	Month	Short tons
January.....	77,645	July.....	84,727
February.....	76,274	August.....	86,184
March.....	89,520	September.....	88,851
April.....	89,690	October.....	86,435
May.....	88,505	November.....	97,057
June.....	85,478	December.....	91,198
		Total.....	1,053,584

TABLE 393. Production of Lime, by Provinces, Showing Purposes for Which Used¹ or Sold, 1947

	New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Total Canada
(Tons of 2,000 pounds)							
QUICKLIME							
BUILDING TRADES:							
Finishing lime..... ton	1,655	-	5,376	-	7,502	-	14,533
\$	36,506	-	50,780	-	76,304	-	163,590
Masons' lime..... ton	-	23,320	10,167	3,699	-	-	38,598
\$	20,841	289,110	120,734	42,077	-	-	472,762
AGRICULTURE..... ton	-	-	30	-	-	83	113
\$	-	-	208	-	-	910	1,118
INDUSTRIAL:							
Non-ferrous smelters..... ton	-	7,930	734	-	2,643	-	11,307
\$	-	67,726	3,206	-	21,145	-	92,077
Iron and steel furnaces..... ton	1,404	11,743	23,119	1,253	100	3,499	41,118
\$	20,723	93,272	182,448	12,638	950	43,225	353,256
Cyanide and flotation mills..... ton	-	-	7,527	6,391	-	567	14,585
\$	-	-	60,061	64,800	-	7,000	131,861
Pulp and paper mills..... ton	13,275	102,844	29,180	17,312	-	35,791	198,402
\$	173,029	871,700	215,209	159,752	-	456,009	1,875,699
Glass works..... ton	-	-	25,314	-	-	-	25,314
\$	-	-	140,135	-	-	-	140,135
Sugar refineries..... ton	176	10	4,689	-	10,444	-	15,299
\$	2,611	137	21,364	-	86,670	-	110,782
Tanneries..... ton	6	1,179	2,464	-	-	-	3,649
\$	89	12,359	18,737	-	-	-	31,185
Sand-lime brick..... ton	-	2,920	5,764	1,435	-	-	10,119
\$	-	19,859	39,911	16,325	-	-	76,095
Insecticide plants..... ton	-	-	1,002	-	-	-	1,002
\$	-	-	7,254	-	-	-	7,254
Other industrial works..... ton	-	97,413	320,436	-	3,000	828	421,697
\$	-	1,002,806	2,442,251	-	30,400	10,225	3,485,682
OTHER CONSUMERS..... ton	-	-	472	-	100	-	6,150
\$	-	-	3,853	-	600	75,250	79,703
Total Quicklime..... ton	17,928	247,359	436,374	30,090	23,789	46,346	801,886
\$	253,799	2,356,969	3,306,151	295,592	216,069	592,619	7,021,199
HYDRATED LIME							
BUILDING TRADES:							
Finishing lime..... ton	-	2,257	31,365	7,172	1,583	-	42,377
\$	-	25,131	435,330	138,880	15,830	-	615,171
Masons' lime..... ton	488	21,724	8,985	-	-	-	31,197
\$	6,710	179,513	99,447	-	-	-	285,670
AGRICULTURE..... ton	-	3,013	1,881	-	-	1,657	6,551
\$	-	20,927	20,336	-	-	18,483	59,746
INDUSTRIAL:							
Non-ferrous smelters..... ton	-	59,838	770	-	105	-	60,713
\$	-	193,858	8,591	-	1,050	-	203,499
Iron and steel furnaces..... ton	-	8	281	-	-	-	289
\$	-	80	3,185	-	-	-	3,265
Cyanide and flotation mills..... ton	-	1,025	230	-	256	49	1,560
\$	-	7,200	2,530	-	2,560	566	12,856
Pulp and paper mills..... ton	2,160	7,291	5,086	-	-	46	14,583
\$	29,700	69,251	57,152	-	-	500	156,603
Sugar refineries..... ton	44	145	-	2,979	-	-	3,168
\$	605	1,603	-	24,135	-	-	26,343
Tanneries..... ton	-	125	1,994	-	-	-	2,119
\$	-	1,343	22,010	-	-	-	23,353
Sand-lime brick..... ton	-	-	271	-	-	-	271
\$	-	-	2,993	-	-	-	2,993
Insecticide plants..... ton	75	-	5	-	-	-	80
\$	1,031	-	49	-	-	-	1,080
Other industrial works..... ton	243	4,712	3,403	156	-	186	8,700
\$	3,333	36,815	38,170	2,110	-	2,070	82,498
OTHER CONSUMERS..... ton	-	1,541	36	-	-	2,342	3,919
\$	-	10,801	550	-	-	36,850	48,231
Total Hydrated Lime..... ton	3,010	101,679	54,307	10,307	1,944	4,280	175,527
\$	41,379	546,522	690,343	165,125	19,440	58,499	1,521,308
Grand Total..... ton	20,938	349,038	490,681	40,397	25,733	50,626	977,413
\$	295,178	2,903,491	3,996,494	460,717	235,509	651,118	8,542,507

1. Not necessarily consumed in provinces where produced; includes by-product lime.

Note. Of the total quantity of 977,413 tons of lime produced 439,146 tons were consumed by the producers themselves. Of this latter amount, 306,273 tons of quicklime were consumed in Ontario; 96,482 tons of quicklime in Quebec and the balance, 33,256 tons of quicklime and 3,135 tons of hydrated in other provinces.

TABLE 394. Production of Lime, by Provinces, Showing Purposes for which Used¹ or Sold, 1948

	New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Total Canada
(Tons of 2,000 pounds)							
QUICKLIME							
BUILDING TRADES:							
Finishing lime.....	ton 1,725	-	5,404	2,405	6,866	-	16,400
	\$ 38,070	-	60,044	16,017	74,308	-	188,439
Masons' lime.....	ton 1,327	26,207	11,848	2,723	-	-	42,105
	\$ 20,157	365,953	160,512	35,279	-	-	581,901
AGRICULTURE.....							
	ton -	-	237	-	-	-	237
	\$ -	-	3,443	-	-	-	3,443
INDUSTRIAL:							
Non-ferrous smelters.....	ton -	11,452	191	-	2,969	-	14,612
	\$ -	108,725	1,559	-	23,750	-	134,034
Iron and steel furnaces.....	ton 1,136	9,706	26,026	1,726	100	4,178	42,872
	\$ 17,256	84,516	224,031	20,237	950	66,848	413,838
Cyanide and flotation mills.....	ton -	-	3,035	6,353	30	550	15,468
	\$ -	-	69,727	84,874	240	10,450	165,291
Pulp and paper mills.....	ton 14,816	105,889	33,692	22,022	-	41,298	217,717
	\$ 222,942	985,537	268,661	233,756	-	724,075	2,434,971
Glass works.....	ton -	-	14,451	-	-	-	14,451
	\$ -	-	138,023	-	-	-	138,023
Sugar refineries.....	ton 199	-	5,715	-	10,152	-	16,066
	\$ 3,023	-	26,015	-	34,182	-	113,220
Tanneries.....	ton 6	766	2,097	-	-	-	2,869
	\$ 93	9,122	17,802	-	-	-	27,017
Sand-lime brick.....	ton -	2,682	5,118	609	-	-	8,409
	\$ -	20,114	43,002	8,101	-	-	71,217
Insecticide plants.....	ton -	-	508	-	-	-	508
	\$ -	-	3,876	-	-	-	3,876
Other industrial works.....	ton -	125,503	323,287	-	3,320	-	452,110
	\$ -	1,510,723	2,780,786	-	42,000	-	4,333,511
OTHER CONSUMERS.....							
	ton -	1,334	25	-	-	4,860	6,219
	\$ -	13,282	291	-	-	87,480	101,053
Total quicklime.....	ton 19,209	283,539	436,634	36,338	23,437	50,886	850,043
	\$ 301,541	3,097,972	3,797,774	398,264	225,430	888,853	8,709,834
HYDRATED LIME							
BUILDING TRADES:							
Finishing lime.....	ton -	2,025	45,003	7,405	624	-	55,057
	\$ -	22,996	660,453	147,933	6,240	-	837,622
Masons' lime.....	ton 1,315	16,518	9,993	-	-	-	27,826
	\$ 18,634	171,587	118,217	-	-	-	308,438
AGRICULTURE.....							
	ton -	8,190	2,208	-	-	1,614	12,012
	\$ -	66,894	23,895	-	-	29,904	120,693
INDUSTRIAL:							
Non-ferrous smelters.....	ton -	67,997	650	-	55	-	68,702
	\$ -	224,549	7,292	-	550	-	232,391
Iron and steel furnaces.....	ton -	-	283	-	-	-	283
	\$ -	-	3,179	-	-	-	3,179
Cyanide and flotation mills.....	ton -	1,275	292	-	205	-	1,772
	\$ -	10,122	3,403	-	2,050	-	15,575
Pulp and paper mills.....	ton 1,861	7,682	2,170	-	-	897	12,600
	\$ 26,370	73,762	24,161	-	-	18,002	142,295
Sugar refineries.....	ton 32	175	-	3,044	-	-	3,251
	\$ 453	1,995	-	29,309	-	-	31,757
Tanneries.....	ton -	700	1,972	-	-	-	2,672
	\$ -	5,978	22,268	-	-	-	28,246
Sand-lime brick.....	ton -	-	1,225	-	-	-	1,225
	\$ -	-	14,079	-	-	-	14,079
Insecticide plants.....	ton 211	-	-	-	-	-	211
	\$ 2,990	-	-	-	-	-	2,990
Other industrial works.....	ton 256	685	4,153	146	-	800	6,040
	\$ 3,633	8,162	46,653	2,146	-	18,000	78,594
OTHER CONSUMERS.....							
	ton -	4,807	3,547	-	50	3,486	11,890
	\$ -	23,616	40,147	-	500	65,106	129,369
Total hydrated lime.....	ton 3,675	110,054	71,496	10,595	934	6,787	203,541
	\$ 52,080	609,661	963,747	179,388	9,340	131,012	1,945,228
Grand total.....	ton 22,884	393,593	508,130	46,933	24,371	57,673	1,053,584
	\$ 353,621	3,707,633	4,761,521	577,652	234,770	1,019,865	10,655,062

Note. Of the total quantity of 1,053,584 tons of lime produced, 459,475 tons were consumed by the producers themselves. Of this latter amount, 297,611 tons of quicklime were consumed in Ontario; 123,604 tons of quicklime in Quebec and the balance, 35,070 tons of quicklime and 3,190 tons of hydrated, in other provinces.

1. Not necessarily consumed in provinces where produced; includes by-product lime.

TABLE 395. Lime Sold or Used for Chemical and Other Purposes, 1939-1948

Year	Lime sold or used for chemical and industrial purposes				Lime sold or used for building or other non-industrial purposes			
	Quicklime		Hydrated Lime		Quicklime		Hydrated Lime	
	Short tons	\$	Short tons	\$	Short tons	\$	Short tons	\$
1939.....	424,287	2,887,244	30,861	172,062	50,466	439,403	46,595	504,805
1940.....	568,479	3,944,748	44,421	256,570	55,324	477,010	48,506	516,227
1941.....	665,319	4,797,078	86,202	496,531	58,545	490,633	50,819	573,699
1942.....	712,307	5,314,653	89,252	386,809	36,975	331,396	46,296	497,981
1943.....	730,499	5,642,420	94,224	381,250	35,648	347,668	47,397	461,654
1944.....	700,708	5,545,695	89,576	413,573	37,494	402,384	57,364	565,192
1945.....	671,341	5,159,761	60,926	323,484	36,832	420,107	63,154	621,686
1946.....	629,757	5,138,185	76,898	406,635	54,917	640,058	79,227	890,062
1947.....	742,492	6,304,026	91,483	512,490	59,394	717,173	84,044	1,008,818
1948.....	785,082	7,834,998	96,756	549,106	64,961	874,836	106,785	1,396,122

TABLE 396. Imports and Exports of Lime, 1947 and 1948

	1947		1948	
	Quantity	Value	Quantity	Value
	Tons	\$	Tons	\$
IMPORTS				
Lime:				
United States.....	13,044	115,199	23,878	219,485
Total.....	13,044	115,199	23,878	219,485
EXPORTS				
Building Lime:				
St. Pierre.....	10	230	1	50
Newfoundland.....	121	2,964	156	2,559
United States.....	99	1,313	374	9,833
Jamaica.....	5	125	-	-
Total.....	235	4,632	531	12,442
Lime (Other):				
Alaska.....	-	12	2	54
British Guiana.....	-	-	1	39
Jamaica.....	-	-	5	150
Newfoundland.....	568	8,130	440	7,695
St. Pierre.....	-	19	3	85
Netherlands West Indies.....	-	-	5	125
United States.....	27,812	284,785	31,367	450,519
Total.....	28,380	292,946	31,823	458,667

TABLE 397. Employees and Earnings in the Lime Industry, 1944-1948

Year	Number of Employees					Salaries	Wages	Total Salaries and Wages
	On Salaries		On Wages		Total			
	Male	Female	Male	Female				
1944.....	80	22	713	—	815	\$ 178,802	\$ 1,235,624	\$ 1,414,426
1945.....	81	19	748	8	856	194,191	1,279,638	1,473,829
	Administration		Workmen			Administration earnings	Workmen's earnings	
1946.....	49	11	850	8	918	132,431	1,484,408	1,616,839
1947.....	64	14	949	11	1,038	215,227	1,837,574	2,052,801
1948.....	72	13	1,025	11	1,121	259,675	2,199,624	2,459,299

Note: Administration employees include executives, managers, superintendents, other working officials, and professional and clerical employees.

TABLE 398. Workmen in the Lime Industry, by Months, 1947 and 1948

Month	1947				1948			
	Quarry	Kiln		Total	Quarry	Kiln		Total
	Male	Male	Female		Male	Male	Female	
January.....	262	631	11	904	239	689	8	936
February.....	266	625	11	902	240	710	11	961
March.....	264	645	11	920	245	685	12	942
April.....	286	667	11	964	254	755	12	1,021
May.....	279	698	11	988	261	781	12	1,054
June.....	283	717	11	1,011	263	799	10	1,072
July.....	273	700	11	984	269	807	10	1,086
August.....	270	686	11	967	260	798	13	1,071
September.....	271	704	11	986	256	795	12	1,063
October.....	267	711	11	989	255	824	11	1,090
November.....	260	709	11	980	266	829	10	1,105
December.....	245	678	11	934	245	759	9	1,013
Average.....	269	680	11	960	254	771	11	1,036

TABLE 399. Kiln Capacities in the Lime Industry, 1943-1948

Year	Total kilns		Kilns in use during the year	
	Number	Total capacity tons per 24 hours	Number	Total capacity tons per 24 hours
1943.....	166	4,007	133	3,328
1944.....	158	4,054	129	3,033
1945.....	150	4,127	121	3,158
1946.....	140	4,368	117	3,591
1947.....	158	4,621	133	3,978
1948.....	Stack 123 Rotary 22	4,984	Stack 113 Rotary 17	4,322

THE SAND-LIME BRICK INDUSTRY

Five plants in Canada operated in this industry during 1948. Three of these were located in Ontario, 1 in Quebec and 1 in Manitoba. Production, including some building blocks, haydite tile, etc., was valued at \$1,452,366 compared with the 1947 total of \$592,170.

An average of 206 people was employed in these works in 1948, and they were paid \$440,816 in salaries and wages. Expenditures for fuel and electricity amounted to \$82,222 and for processing materials to \$360,266.

Production of sand-lime brick amounted to 39,210 M valued at \$776,298 an increase in both quantity and value over the output of 35,017 M bricks at \$527,275 in the previous year. Production of sand-lime building blocks increased to 468 M at \$94,702 over 323 M at \$56,220 in 1947.

TABLE 400. Products Made in the Sand-Lime Brick Industry, 1947 and 1948

Product	1947		1948	
	Quantity	Selling value at works	Quantity	Selling value at works
	M	\$	M	\$
Sand-lime brick.....	35,017	527,275	39,210	776,298
Sand-lime building blocks.....	323	56,220	468	94,702
Other products ¹	-	8,675	-	581,366
Total	-	592,170	-	1,452,366

1. Includes cement blocks and haydite tile, etc.

TABLE 401. Materials Used in the Sand-Lime Brick Industry, 1947 and 1948

Materials	Unit of measure	1947		1948	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Portland cement.....	bag	1,800	1,102	61,124	41,703
Quicklime.....	ton	7,505	78,372	9,186	108,886
Sand and gravel.....	cu. yd.	54,008	68,819	69,613	108,355
Other materials.....	—	—	4,069	—	101,322
Total.....	—	—	152,362	—	360,266

TABLE 402. Production of Sand-Lime Brick, 1939-1948 (From all industries)

Year	Quantity	Selling value at works	Year	Quantity	Selling value at works
	M	\$		M	\$
1939.....	11,805	133,168	1944.....	12,235	171,594
1940.....	17,405	196,423	1945.....	15,514	260,136
1941.....	19,223	230,030	1946.....	39,096	572,008
1942.....	12,472	169,716	1947.....	35,017	527,275
1943.....	9,088	123,268	1948.....	40,006	795,402

THE SAND AND GRAVEL INDUSTRY

The commercial production of sand and gravel in Canada during 1948 amounted to 68,670,863 short tons valued at \$30,629,596 compared with 56,789,569 tons valued at \$23,114,431 in 1947, an increase of 21 per cent in tonnage and 32 per cent in value. The totals included sand and gravel used by railroads as ballast, gravel used by mines as back fill, and recoveries of sand by dredges as well as similar materials from other sources.

The greatest increase in the amount of sand and gravel used was in Quebec, where 28,102,377 tons were produced. Ontario's production of 20,588,496 tons was about 2 per cent greater than in the preceding year. Canadian sand and gravel plants screened or washed 8,997,765 tons in 1948 compared with 7,330,996 tons in 1947, and the quantity of bank or pit-run grades amounted to 59,673,098 tons compared with 49,458,573 tons in 1947.

Output in 1948 included 46,513,278 tons of mixed sand and gravel for roads, concrete, etc., 7,786,416 tons of straight-run sand for building, concrete, etc., 53,395 tons of moulding and core sand, 1,480,568 tons of mine fill and 59,047 tons for other uses. The quantity of crushed gravel amounted to 8,254,505 tons.

Imports of sand and gravel amounted to 134,775 tons valued at \$113,258 in 1948, and exports totalled 383,989 tons valued at \$346,608.

TABLE 403. Principal Statistics¹ for the Sand and Gravel Industry, 1947 and 1948

Province	Operators	Employees	Salaries and wages	Cost of fuel and electricity	Cost of process supplies	Gross value of products sold during year (f.o.b. works)
			\$	\$	\$	\$
1947						
Nova Scotia	3	444	387,274	18,078	-	1,337,547
New Brunswick	4	339	461,921	195	-	1,176,640
Quebec	887	1,240	1,424,181	103,513	12,892	4,733,362
Ontario	635	684	1,310,990	413,388	54,094	8,692,201
Manitoba	13	288	469,885	21,897	31,649	506,836
Saskatchewan	24	151	104,887	1,988	14,830	1,094,281
Alberta	6	56	97,552	24,876	4,259	1,118,537
British Columbia	26	228	451,271	102,550	8,818	3,638,993
Total	1,598	3,430	4,707,961	686,485	126,542	22,300,397
1948						
Nova Scotia	5	567	749,832	20,686	3,831	1,699,775
New Brunswick	3	256	460,696	310	-	1,140,349
Quebec	980	1,954	2,582,415	130,798	70,696	9,256,197
Ontario	638	711	1,469,853	554,054	48,079	10,101,779
Manitoba	11	231	524,237	23,939	50,401	740,790
Saskatchewan	52	117	135,074	1,898	19,868	849,702
Alberta	5	53	125,914	27,458	6,433	2,139,692
British Columbia	24	308	704,083	91,897	50,677	3,685,509
Total	1,718	4,197	6,752,103	851,040	249,984	29,613,793

1. Does not include data on sand and gravel produced by railroads. In 1948 railroad production by 22 operators was 4,623,161 tons valued at \$1,015,803. Salaries and wages paid to workers at these pits were \$305,090 for the year. In 1947 railroad production by 23 operators was 4,091,032 tons valued at \$614,034, and salaries and wages totalled \$233,187.

TABLE 404. Production¹ of Sand and Gravel, 1939-1948

Year	Tons	\$
1939	31,294,341	11,241,102
1940	31,375,415	11,759,245
1941	31,604,806	10,375,723
1942	26,349,907	9,005,414
1943	25,744,469	9,005,867
1944	28,399,986	10,280,119
1945	29,750,703	10,568,363
1946	39,949,994	15,529,700
1947	56,789,569	23,114,431
1948	68,670,863	30,629,596

1. Does not include production of natural silica sand or of silica sand manufactured from quartz or silica rock; production of these are recorded under quartz.

TABLE 405. Production of Sand and Gravel, 1947 and 1948

	Washed or screened	Bank or pit run	Total value
	tons	tons	\$
1947			
PRODUCTION¹			
Sand:			
Moulding sand	21,467	4,930	61,736
Building sand and sand for concrete, roadwork, etc.	2,504,669	913,403	1,981,328
Core sand	-	2,519	4,450
Mine filling	25,743	1,868,100	429,946
Other sand (including blast sands, engine sands, etc.)	3,411	40,242	13,900
Sand and Gravel:			
Sand and gravel for railway ballast	312,905	3,848,246	986,241
Sand and gravel for concrete, road-building, etc.	2,997,730	38,889,975	16,619,097
Crushed gravel	1,465,071	3,891,158	3,017,733
Total	7,330,996	49,458,573	23,114,431
1948			
PRODUCTION¹			
Sand:			
Moulding sand	41,177	10,675	91,394
Building sand and sand for concrete, roadwork, etc.	3,119,556	4,666,860	3,487,568
Core sand	-	1,543	2,873
Mine filling	85,356	1,395,202	364,922
Other sand (including blast sands, engine sands, etc.)	5,455	53,592	15,525
Sand and Gravel:			
Sand and gravel for railway ballast	418,882	4,104,782	1,259,385
Sand and gravel for concrete, road-building, etc.	3,994,238	42,519,040	20,555,655
Crushed gravel	1,333,101	6,921,404	4,852,274
Total	8,997,765	59,673,098	30,629,596

1. Does not include production of natural silica sand or of silica sand manufactured from quartz or silica rock; production of these are recorded under quartz in the bulletin "The Feldspar and Quartz Mining Industry".

TABLE 406. Production of Sand and Gravel, by Provinces, 1946-1948

Province	1946	1947	1948
Prince Edward Island.....	—	No commercial production	
Nova Scotia.....	Tons 1,105,980	2,966,680	1,636,808
	\$ 484,585	1,363,363	1,706,838
New Brunswick.....	Tons 2,203,646	3,464,347	3,347,817
	\$ 807,045	1,278,376	1,231,256
Quebec.....	Tons 12,374,125	16,537,303	28,102,377
	\$ 3,313,103	4,877,339	9,535,944
Ontario.....	Tons 14,881,918	20,230,499	20,588,496
	\$ 6,738,595	9,034,131	10,468,216
Manitoba.....	Tons 1,333,890	1,765,976	2,498,277
	\$ 416,431	549,640	754,196
Saskatchewan.....	Tons 1,732,731	2,131,705	1,846,336
	\$ 910,661	1,137,609	917,243
Alberta.....	Tons 1,812,468	2,058,142	3,592,275
	\$ 1,060,703	1,170,883	2,219,497
British Columbia.....	Tons 4,505,236	7,634,917	7,058,477
	\$ 1,798,577	3,703,090	3,796,406
Canada.....	Tons 39,949,994	56,789,569	68,670,863
	\$ 15,529,700	23,114,431	30,629,596

TABLE 407. Production of Washed and Screened and Pit Run Grades, by Provinces, 1948

Province	Washed or screened	Bank or pit run	Total value
	tons	tons	\$
Nova Scotia.....	407,738	1,229,070	1,706,838
New Brunswick.....	—	3,347,817	1,231,256
Quebec.....	1,566,610	26,535,767	9,535,944
Ontario.....	5,099,912	15,488,584	10,468,216
Manitoba.....	133,992	2,364,285	754,196
Saskatchewan.....	1,390	1,844,946	917,243
Alberta.....	175,373	3,416,902	2,219,497
British Columbia.....	1,612,750	5,445,727	3,796,406
Total.....	8,997,765	59,673,098	30,629,596

TABLE 408. Production of Sand for Building and for Concrete, Roads, etc., and Sand and Gravel for Railway Ballast and for Concrete, Roads, etc., 1939-1948

Year	Sand		Sand and Gravel			
	For building, concrete, roads, etc. ¹		For railway ballast		For concrete, roads, etc.	
	Tons	\$	Tons	\$	Tons	\$
1939.....	1,169,899	364,829	3,223,718	603,288	22,899,751	8,988,114
1940.....	1,961,604	537,937	3,834,904	699,518	21,465,961	9,100,612
1941.....	2,192,405	729,901	4,836,908	916,979	19,769,798	7,135,258
1942.....	2,535,366	934,777	4,610,323	957,781	16,139,859	6,010,412
1943.....	1,970,316	775,392	3,837,111	712,140	16,060,686	6,155,625
1944.....	1,605,514	743,191	4,428,721	900,610	16,648,511	6,898,582
1945.....	2,247,887	918,739	4,625,513	1,116,297	17,582,686	6,573,527
1946.....	3,421,830	1,681,572	3,968,123	867,616	26,640,116	10,530,718
1947.....	3,418,072	1,981,328	4,161,151	986,241	41,887,705	16,619,097
1948:						
Nova Scotia.....	45,710	33,298	175,698	105,480	1,407,981	1,549,548
New Brunswick.....	3,456	512	205,004	30,371	3,030,635	1,140,349
Quebec.....	5,289,642	1,772,717	899,660	243,674	15,257,974	4,082,739
Ontario.....	2,003,110	1,387,875	2,228,532	641,618	13,973,205	7,106,929
Manitoba.....	88,367	49,574	85,513	18,157	2,219,133	593,927
Saskatchewan.....	9,932	3,713	385,793	68,970	1,448,794	844,011
Alberta.....	81,385	63,604	364,963	75,253	3,059,043	2,030,044
British Columbia.....	264,814	176,275	178,501	75,862	6,116,513	3,208,108
Canada.....	7,786,416	3,487,568	4,523,664	1,259,385	46,513,278	20,555,655

1. Exclusive of engine and other sands and mine fill.

TABLE 409. Production of Moulding and Core Sand and Crushed Gravel, by Provinces, 1948

Province	Moulding sand and core sand		Crushed gravel	
	Tons	\$	Tons	\$
Nova Scotia	1,695	7,744	5,724	10,768
New Brunswick	-	-	107,797	59,887
Quebec	-	-	6,349,819	3,350,386
Ontario	51,415	86,221	1,253,984	979,342
Manitoba	272	272	99,381	89,771
Saskatchewan	13	30	-	-
Alberta	-	-	77,528	47,180
British Columbia	-	-	360,272	314,940
Canada, 1948	53,395	94,267	8,254,505	4,852,274
Canada, 1947	28,916	66,186	5,356,229	3,017,733

TABLE 410. Workmen¹ in the Sand and Gravel Industry, by Months, 1947 and 1948

Month	1947			1948		
	Male	Female	Total	Male	Female	Total
January	753	1	754	853	2	855
February	788	1	789	865	2	867
March	966	1	967	1,000	2	1,002
April	1,192	9	1,201	1,225	8	1,233
May	3,756	12	3,768	5,529	12	5,541
June	9,584	10	9,594	11,198	12	11,210
July	9,707	11	9,718	11,320	12	11,332
August	4,492	51	4,543	6,290	11	6,301
September	4,014	11	4,025	5,809	10	5,819
October	1,576	10	1,586	1,691	9	1,700
November	1,289	9	1,298	1,483	9	1,492
December	1,018	4	1,022	1,075	4	1,079
Average	3,273	10	3,283	4,033	10	4,043

1. This report does not include employment data relating to the production of sand and gravel by railroads owing to the difficulty of separating statistics pertaining to part-time work conducted by railroad maintenance employees and work done by contractors. In 1948, the combined amount paid by railroads to contractors and wages paid railroad employees for the production of sand and gravel totalled \$305,090.

THE STONE INDUSTRY

The Stone Industry is made up of two main divisions: (1) THE STONE QUARRYING INDUSTRY, including quarries and dressing works operated in conjunction with Quarries; (2) THE STONE PRODUCTS INDUSTRY, comprising the operations of firms having no quarries but which operate dressing works where stone for building and monumental purposes is cut, polished or otherwise finished. In the Census of Industry, statistics on the stone quarrying industry are included under Mining, while statistics of the stone products industry are included under Manufactures. For convenience, this report carries data for both of these industries.

Production by these industries during the year totalled \$31,498,839 which figure includes the value of the quarry output and the value added by manufacturing in the secondary stone industry. Salaried employees and wage-earners employed in 1948 numbered 4,944 and their combined earnings amounted to \$10,117,760.

The two industries are treated separately in the following review.

1. PRIMARY PRODUCTION — THE STONE QUARRYING INDUSTRY

The kinds of stone quarried in Canada include granite (trap rock, syenite and other igneous rock), limestone, marble, sandstone, and slate. Rocks of the igneous areas of British Columbia, Manitoba, Ontario, Quebec and the Maritime Provinces exhibit a wide range of physical characteristics, some varieties being especially noted for their richness of colour and beauty of crystallization. Sedimentary rocks, including limestones, sandstones and marbles are worked at various locations and the quarries operating in these different formations not only yield high class structural and decorative products but also provide materials for the chemical and allied industries.

The gross value of all varieties of new stone produced in Canada for use during 1948 amounted to \$17,948,553 compared with \$16,464,749 in 1947. The tonnage shipped in 1948 included 1,042,28 tons of granite (igneous rock) valued at \$3,779,436; 10,003,142 tons of limestone worth \$12,523,275; 68,347 tons of marble valued at \$528,529; 577,887 tons of sandstone valued at \$1,065,829 and 4,339 tons of slate worth \$51,484.

Of the total value of production, the Quebec quarries contributed 48.7 per cent; Ontario accounted for 35.3 per cent; British Columbia 7.9 per cent and the remainder came from Nova Scotia, New Brunswick, Manitoba and Alberta.

TABLE 411. Principal Statistics of the Stone Quarrying Industry, 1946-1948

	1946	1947	1948
Number of firms	411	409	435
Number of employees:			
On salary.....	176	216	226
On wages.....	2,544	2,950	2,856
Total.....	2,720	3,166	3,082
Salaries and wages:			
Salaries.....	\$ 316,722	\$ 438,980	\$ 539,308
Wages.....	\$ 3,653,682	\$ 4,941,279	\$ 5,451,614
Total.....	\$ 3,970,404	\$ 5,380,259	\$ 5,990,922
Selling value of products (Gross).....	\$ 11,185,711	\$ 16,464,749	\$ 17,948,553
Cost of fuel and electricity.....	\$ 834,824	\$ 989,408	\$ 1,141,208
Process supplies used.....	\$ 856,774	\$ 1,266,522	\$ 1,476,455
Selling value of products (Net).....	\$ 9,494,113	\$ 14,208,819	\$ 15,330,890

TABLE 412. Principal Statistics of the Stone Quarrying Industry, by Provinces, 1947 and 1948

Province	Number of quarries	Average number of employees	Salaries and wages	Cost of fuel and electricity	Process supplies	Gross value of production
			\$	\$	\$	\$
1947						
Nova Scotia	32	126	164,272	27,549	44,660	608,514
New Brunswick	7	95	141,167	28,721	10,256	442,685
Quebec.....	129	1,864	2,997,409	549,600	589,069	7,846,407
Ontario.....	226	834	1,655,907	332,131	550,813	5,906,909
Manitoba.....	9	97	161,198	26,283	21,596	360,876
Saskatchewan.....	—	—	—	—	—	—
Alberta.....	3	—	—	—	—	57,600
British Columbia.....	77	150	260,306	25,124	50,128	1,241,748
Canada.....	483	3,166	5,380,259	989,408	1,266,522	16,464,749
1948						
Nova Scotia	28	156	264,343	40,791	76,129	681,297
New Brunswick	8	103	171,008	28,168	14,130	437,129
Quebec.....	158	1,753	3,187,781	604,681	754,928	8,741,897
Ontario.....	210	833	1,885,340	411,680	541,292	6,338,253
Manitoba.....	9	69	123,658	19,024	18,785	282,279
Saskatchewan.....	—	—	—	—	—	—
Alberta.....	3	—	—	20	—	57,444
British Columbia.....	138	168	358,792	36,844	71,191	1,410,254
Canada.....	554	3,082	5,990,922	1,141,208	1,476,455	17,948,553

TABLE 413. Production (Sales) of Stone from Quarries, by Kinds and by Provinces, 1947 and 1948

Province	Granite ¹	Limestone ²	Marble	Sandstone	Slate	Total
1947						
Nova Scotia..... tons	438	111,263	-	267,921	-	379,622
..... \$	53,486	275,613	-	279,415	-	608,514
New Brunswick..... tons	364	112,205	-	114,850	-	227,419
..... \$	4,675	262,820	-	175,200	-	442,695
Quebec..... tons	213,898	3,643,337	15,630	393,616	475	4,266,956
..... \$	2,131,565	5,086,791	191,539	435,332	1,180	7,846,407
Ontario..... tons	192,273	4,607,202	29,659	15,513	-	4,844,647
..... \$	784,408	4,908,328	129,726	84,447	-	5,906,909
Manitoba..... tons	286	119,477	-	-	-	119,763
..... \$	5,365	355,511	-	-	-	360,876
Alberta..... tons	-	13,883	-	-	-	13,883
..... \$	-	57,600	-	-	-	57,600
British Columbia..... tons	144,268	890,387	285	1,000	1,158	1,037,098
..... \$	195,865	1,019,857	5,340	1,000	19,686	1,241,748
Canada..... tons	551,527	9,497,754	45,574	792,900	1,633	10,889,388
..... \$	3,175,364	11,966,520	326,605	975,394	20,866	16,464,749
1948						
Nova Scotia..... tons	553	135,577	-	103,528	-	239,658
..... \$	105,991	306,107	-	269,199	-	681,297
New Brunswick..... tons	418	132,120	-	5,940	-	138,478
..... \$	22,760	335,519	-	78,850	-	437,129
Quebec..... tons	155,031	4,331,904	18,075	375,404	345	4,880,759
..... \$	2,218,520	5,724,490	259,720	538,304	863	8,741,897
Ontario..... tons	469,789	4,485,489	49,847	12,815	-	5,017,940
..... \$	1,114,060	4,864,108	260,809	99,276	-	6,338,253
Manitoba..... tons	395	147,444	-	-	-	147,839
..... \$	7,299	274,980	-	-	-	282,279
Alberta..... tons	-	14,298	-	-	-	14,298
..... \$	-	57,444	-	-	-	57,444
British Columbia..... tons	416,742	756,310	425	80,200	3,994	1,257,671
..... \$	310,806	960,627	8,000	80,200	50,621	1,410,254
Canada..... tons	1,042,928	10,003,142	68,347	577,887	4,339	11,696,643
..... \$	3,779,436	12,523,275	528,529	1,065,829	51,484	17,948,553

1. All igneous rocks included.

2. Includes dolomite, also marl for agricultural purposes.

Note. Not included in the above limestone statistics are 3,057,675 tons of limestone consumed in the cement industry in 1947, and 3,449,947 tons in 1948. Also, the limestone used in the lime industry is not included; it is estimated that approximately 1,730,741 tons of limestone were burned in the manufacture of lime in 1947 and 1,860,890 tons in 1948.

TABLE 414. Production (Sales) of Stone¹ from Quarries, by Provinces, Showing Purposes for Which Used, 1947 and 1948

For use as follows:	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
1947								
Building stone:								
Rough..... tons	11,377	326	20,936	23,456	2,981	-	1,445	60,521
..... \$	27,414	2,839	96,120	143,765	43,893	-	13,460	327,491
Dressed..... tons	2,002	1,038	27,446	8,448	3,381	-	5	42,320
..... \$	14,014	77,836	1,382,136	119,123	178,171	-	94	1,771,374
Monumental and ornamental stone:								
Rough..... tons	80	-	9,836	2,201	-	-	2,000	14,117
..... \$	1,600	-	195,887	8,252	-	-	23,000	228,739
Dressed..... tons	358	-	7,035	-	118	-	80	7,591
..... \$	51,886	-	1,180,313	-	4,548	-	10,413	1,247,160
Flagstone..... tons	-	150	1,209	4,858	854	-	-	7,071
..... \$	-	1,000	17,105	16,884	1,734	-	-	36,723
Curbstone..... tons	-	-	2	-	-	-	-	2
..... \$	-	-	18	-	-	-	-	18
Paving blocks..... tons	-	-	486	149	-	-	-	635
..... \$	-	-	5,809	663	-	-	-	6,472
Lining open-hearth furnaces..... tons	29,600	-	-	29,539	-	-	-	59,139
..... \$	63,730	-	-	35,446	-	-	-	99,176
Chemical:								
Flux in iron and steel furnaces..... tons	-	-	1,508	423,787	5,150	-	5	430,450
..... \$	-	-	1,820	387,956	9,667	-	60	399,503
Flux in non-ferrous smelters..... tons	-	-	-	81,080	568	25	68,344	150,017
..... \$	-	-	-	80,040	1,074	50	64,620	145,784
Glass factories..... tons	-	-	810	4,802	-	5,155	-	10,767
..... \$	-	-	3,218	14,037	-	20,620	-	37,875
Pulp and paper mills..... tons	2,088	5,320	156,998	78,404	8,128	-	60,086	311,024
..... \$	15,648	11,966	311,921	201,865	21,319	-	134,161	696,880
Sugar refineries..... tons	-	-	2,000	13,745	-	-	1	15,746
..... \$	-	-	2,700	12,792	-	-	14	15,506
Other chemical uses..... tons	-	-	-	278,597	-	-	8,000	286,597
..... \$	-	-	-	442,124	-	-	8,500	450,624

1. Includes the production of slate and marl.

TABLE 414. Production (Sales) of Stone¹ from Quarries, by Provinces, Showing Purposes for Which Used, 1947 and 1948 - Continued

For use as follows;	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
1947 - Con.								
Pulverized stone:								
Whiting (substitute).....	tons -	-	9,162	7,341	-	-	257	16,760
Asphalt filler.....	tons \$ 285	539	109,944	41,704	-	-	3,581	155,229
Dusting coal mines.....	tons \$ 3,230	2,695	6,877	10,786	4,244	-	1,273	24,004
			25,318	39,897	4,798	-	8,275	84,213
			-	-	-	4,555	202	4,757
			-	-	-	18,220	1,414	19,634
Agricultural purposes and fertil- izer plants.....	tons 64,163	99,824	213,956	61,487	2,408	825	7,890	450,553
Other uses.....	tons \$ 170,626	235,115	488,509	127,009	3,195	3,300	28,545	1,056,299
Crushed stone for manufacture of artificial stone.....	tons -	-	27,754	17,627	1,678	-	53	47,112
			110,897	61,461	2,053	-	477	174,888
			-	-	-	-	-	-
			3,009	1,099	-	-	-	4,108
Roofing granules.....	tons \$ -	-	5,402	4,997	-	-	-	10,399
			1,000	62,843	-	-	-	65,001
Poultry grit.....	tons \$ -	-	1,350	341,741	-	-	1,158	362,777
			1,124	9,933	-	-	19,686	17,119
Stucco dash.....	tons \$ 153	-	7,329	64,278	-	3,155	2,900	105,275
			2,250	438	-	15,270	18,245	5,273
Terrazo chips.....	tons \$ -	-	15,400	5,480	-	-	31,843	52,723
			3,580	6,041	-	-	-	9,621
Rock wool.....	tons \$ -	-	35,569	70,339	-	-	-	105,908
			-	1,366	-	-	-	1,366
Rubble and riprap.....	tons \$ 71,885	10,000	290,879	78,390	563	-	141,689	593,406
		8,000	318,250	264,708	1,320	-	149,118	752,608
Crushed stone:								
Concrete aggregate.....	tons -	-	2,058,365	1,082,292	20,883	168	16,355	3,178,063
Road metal.....	tons \$ 197,777	110,222	2,186,893	1,101,013	31,325	140	17,500	3,336,871
Railroad ballast.....	tons \$ 249,001	103,244	838,934	2,239,490	68,443	-	722,770	4,177,636
			802,731	2,086,679	57,333	-	708,742	4,007,730
			581,800	316,448	364	-	-	898,612
			541,768	232,664	446	-	-	774,878
Total.....	tons \$ 379,622	227,419	4,266,956	4,844,647	119,763	13,883	1,037,098	10,889,388
		442,693	7,846,407	5,906,909	360,876	57,600	1,241,748	16,464,749
Per cent of total.....	Quantity 3.49	2.09	39.18	44.49	1.10	.13	9.52	100.00
	Value 3.69	2.69	47.65	35.88	2.19	.35	7.55	100.00
1948								
Building stone:								
Rough.....	tons -	-	13,967	27,550	160	-	1,311	42,988
Dressed.....	tons \$ 327	968	83,274	204,152	1,465	-	13,605	302,496
		75,400	24,292	9,542	1,990	-	6	37,125
			1,655,135	140,000	105,789	-	500	1,993,824
Monumental and ornamental stone:								
Rough.....	tons 20	270	10,225	278	-	-	2,150	12,943
Dressed.....	tons \$ 2,025	4,300	214,715	7,563	-	-	24,250	252,853
		80	7,295	-	50	-	112	8,063
Flagstone.....	tons \$ 100,991	15,060	1,107,071	-	1,500	-	15,865	1,240,487
		40	1,002	3,468	75	-	-	4,585
Curbstone.....	tons \$ 158	350	16,757	26,641	450	-	-	44,198
		-	3	-	-	-	-	161
Paving blocks.....	tons \$ 1,105	-	76	-	-	-	-	1,181
		-	494	-	-	-	-	494
Lining open-hearth furnaces.....	tons \$ 28,273	-	5,679	-	-	-	-	5,679
		-	-	27,116	3,527	-	-	58,916
		-	-	32,539	7,096	-	-	104,415
Chemical:								
Flux in iron and steel furnaces.....	tons -	-	3,604	425,494	1,376	-	19,608	450,082
Flux in non-ferrous smelters.....	tons \$ -	-	4,630	404,549	3,551	-	19,608	432,338
Glass factories.....	tons -	-	-	94,175	-	30	33,553	127,758
		-	-	92,175	-	60	39,860	132,095
Pulp and paper mills.....	tons \$ 5,945	6,500	600	3,652	-	6,360	-	10,612
		14,625	1,720	10,043	-	21,020	-	32,783
Sugar refineries.....	tons \$ 26,419	-	172,705	74,123	8,522	-	85,866	353,661
		-	401,076	181,046	25,594	-	172,461	821,221
Other chemical uses.....	tons \$ -	-	2,648	8,848	-	-	1	11,497
		-	5,031	8,806	-	-	17	13,654
		-	-	22,051	-	-	-	22,051
		-	-	20,320	-	-	-	20,320
Pulverized stone:								
Whiting (substitute).....	tons -	-	9,870	7,804	-	-	318	17,992
Asphalt filler.....	tons \$ -	-	118,440	48,960	-	-	4,509	171,909
Dusting coal mines.....	tons \$ -	342	7,362	15,444	3,453	-	2,134	28,735
		1,710	27,785	65,073	7,807	-	16,701	119,076
			-	-	-	3,845	150	3,995
			-	-	-	15,380	1,088	16,468
Agricultural purposes and fertil- izer plants.....	tons 66,059	106,341	324,420	77,993	2,045	685	17,878	595,421
Other uses.....	tons \$ 169,008	281,310	544,839	157,016	2,740	2,740	48,986	1,206,639
		-	23,463	34,072	1,286	-	80	58,901
		-	67,685	160,983	1,885	-	880	231,433

1. Includes the production of slate and marl.

TABLE 414. Production (Sales) of Stone¹ from Quarries, by Provinces, Showing Purposes for Which Used, 1947 and 1948 — Concluded

For use as follows:	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
1948 — Con.								
Crushed stone for manufacture of artificial stone.....	tons	—	819	2,036	—	—	—	2,855
	\$	—	5,475	10,216	—	—	—	15,691
Roofing granules.....	tons	—	—	60,183	—	—	3,157	63,340
	\$	—	—	306,764	—	—	54,111	360,875
Poultry grit.....	tons	—	422	14,543	—	3,255	1,744	19,964
	\$	—	5,977	88,580	—	18,120	12,702	125,378
Stucco dash.....	tons	—	3,600	420	—	—	2,568	6,588
	\$	—	28,800	4,920	—	—	33,205	66,925
Terrazo chips.....	tons	—	3,833	7,371	—	—	—	11,204
	\$	—	37,574	79,278	—	—	—	116,852
Rubble and riprap.....	tons	60,500	5,000	282,090	363,214	—	491,073	1,201,877
	\$	166,375	6,500	346,734	634,634	—	315,642	1,469,885
Crushed stone:								
Concrete aggregate.....	tons	3,519	—	2,590,014	372,874	31,279	123	2,997,809
	\$	9,677	—	2,636,294	431,231	39,098	124	3,116,424
Road metal.....	tons	74,331	18,937	771,227	3,015,420	94,024	—	4,568,701
	\$	123,917	37,874	728,976	2,947,814	85,237	—	4,558,882
Railroad ballast.....	tons	—	—	626,804	350,269	52	—	978,325
	\$	—	—	698,154	374,950	67	1,200	974,371
Total.....	tons	239,658	138,478	4,880,759	5,017,940	147,839	1,257,671	11,696,643
	\$	681,297	437,128	8,741,897	6,338,253	282,279	37,444	17,948,533
Per cent of total.....	Quantity	2.05	1.18	41.73	42.90	1.26	0.13	100.00
	Value	3.79	2.44	48.70	35.31	1.57	0.33	100.00

1. Includes the production of slate and marl.

TABLE 415. Production (Sales) of Stone from Quarries, by Kinds, Showing Purposes for Which Used, 1947 and 1948

For use as follows:	Granite ¹	Limestone ²	Marble	Sandstone	Slate	Total
1947						
Building stone:						
Rough.....	tons	5,200	34,697	311	20,313	60,521
	\$	43,498	135,966	14,730	83,297	327,491
Dressed.....	tons	7,853	30,852	113	3,502	42,320
	\$	456,000	1,195,635	20,725	99,014	1,771,374
Monumental and ornamental stone:						
Rough.....	tons	13,912	—	—	205	14,117
	\$	227,447	—	—	1,292	228,739
Dressed.....	tons	7,473	118	—	—	7,591
	\$	1,242,612	4,548	—	—	1,247,160
Flagstone.....	tons	372	2,360	—	4,339	7,071
	\$	372	18,981	—	17,370	36,723
Curbstone.....	tons	2	—	—	—	2
	\$	18	—	—	—	18
Paving blocks.....	tons	526	—	—	109	635
	\$	6,009	—	—	463	6,472
Lining open-hearth furnaces.....	tons	—	59,139	—	—	59,139
	\$	—	99,176	—	—	99,176
Chemical:						
Flux in iron and steel furnaces.....	tons	—	427,908	5	2,537	430,450
	\$	—	382,192	60	17,251	399,503
Flux in non-ferrous smelters.....	tons	—	150,017	—	—	150,017
	\$	—	145,784	—	—	145,784
Glass factories.....	tons	—	10,767	—	—	10,767
	\$	—	37,875	—	—	37,875
Pulp and paper mills.....	tons	—	292,576	18,448	—	311,024
	\$	—	668,009	28,871	—	696,880
Sugar refineries.....	tons	—	15,746	—	—	15,746
	\$	—	15,506	—	—	15,506
Other chemical uses.....	tons	—	286,597	—	—	286,597
	\$	—	450,624	—	—	450,624
Pulverized stone:						
Whiting (substitute).....	tons	—	7,518	9,242	—	16,760
	\$	—	44,005	111,224	—	155,229
Asphalt filler.....	tons	—	24,004	—	—	24,004
	\$	—	84,213	—	—	84,213
Dusting coal mines.....	tons	—	4,757	—	—	4,757
	\$	—	19,634	—	—	19,634
Agricultural purposes and fertilizer plants.....	tons	—	450,553	—	—	450,553
	\$	—	1,056,299	—	—	1,056,299
Other uses.....	tons	1	47,098	13	—	47,112
	\$	3	174,810	75	—	174,888
Crushed stone for manufacture of artificial stone.....	tons	—	3,300	808	—	4,108
	\$	—	5,950	4,449	—	10,399

1. Includes all igneous rock.

2. Does not include limestone used in Canadian Lime and cement industries but includes marl used for agricultural purposes.

TABLE 415. Production (Sales) of Stone from Quarries, by Kinds, Showing Purposes for Which Used, 1947 and 1948 - Concluded

For use as follows:	Granite ¹	Limestone ²	Marble	Sandstone	Slate	Total
1947 - Con.						
Roofing granules..... tons	62,443	1,400	-	-	1,158	65,001
\$	339,341	3,750	-	-	19,686	362,777
Poultry grit..... tons	850	10,904	5,365	-	-	17,119
\$	6,605	75,341	23,329	-	-	105,275
Stucco dash..... tons	367	2,376	2,530	-	-	5,273
\$	5,175	27,668	19,880	-	-	52,723
Terrazzo chips..... tons	-	882	8,739	-	-	9,621
\$	-	2,646	103,262	-	-	105,908
Rock wool..... tons	-	1,366	-	-	-	1,366
\$	-	1,992	-	-	-	1,992
Rubble and riprap..... tons	236,129	245,114	-	111,688	475	593,406
\$	472,687	227,300	-	51,441	1,180	752,608
Crushed Stone:						
Concrete aggregate..... tons	126,576	3,034,278	-	17,209	-	3,178,063
\$	181,255	3,112,143	-	43,473	-	3,336,871
Road metal..... tons	89,823	3,782,373	-	305,440	-	4,177,636
\$	194,342	3,458,189	-	355,199	-	4,007,730
Railroad ballast..... tons	-	571,054	-	327,558	-	898,612
\$	-	468,284	-	306,594	-	774,878
Total ² tons	551,527	9,497,754	45,574	792,900	1,633	10,889,388
\$	3,175,364	11,966,520	326,605	975,394	20,866	16,464,749
1948						
Building stone:						
Rough..... tons	4,836	28,491	490	9,171	-	42,988
\$	37,527	178,660	5,950	80,359	-	302,496
Dressed..... tons	9,260	25,849	366	1,650	-	37,125
\$	682,494	1,156,020	67,710	87,600	-	1,993,824
Monumental and ornamental stone:						
Rough..... tons	12,783	-	140	20	-	12,943
\$	245,030	-	5,798	2,025	-	252,853
Dressed..... tons	8,013	50	-	-	-	8,063
\$	1,238,987	1,500	-	-	-	1,240,487
Flagstone..... tons	400	827	-	3,358	-	4,585
\$	600	13,457	-	30,141	-	44,198
Curbstone..... tons	3	-	-	158	-	161
\$	76	-	-	1,105	-	1,181
Paving blocks..... tons	494	-	-	-	-	494
\$	5,679	-	-	-	-	5,679
Lining open-hearth furnaces..... tons	-	58,916	-	-	-	58,916
\$	-	104,415	-	-	-	104,415
Chemical:						
Flux in iron and steel furnaces..... tons	-	448,156	-	1,926	-	450,082
\$	-	417,862	-	14,476	-	432,338
Flux in non-ferrous smelters..... tons	-	127,758	-	-	-	127,758
\$	-	132,095	-	-	-	132,095
Glass factories..... tons	-	10,612	-	-	-	10,612
\$	-	32,783	-	-	-	32,783
Pulp and paper mills..... tons	-	337,288	16,373	-	-	353,661
\$	-	787,972	33,249	-	-	821,221
Sugar refineries..... tons	-	11,497	-	-	-	11,497
\$	-	13,854	-	-	-	13,854
Other chemical uses..... tons	-	22,051	-	-	-	22,051
\$	-	20,320	-	-	-	20,320
Pulverized Stone:						
Whiting (substitute)..... tons	-	7,997	9,995	-	-	17,992
\$	-	51,469	120,440	-	-	171,909
Asphalt filler..... tons	-	26,972	-	-	1,763	28,735
\$	-	104,972	-	-	14,104	119,076
Dusting coal mines..... tons	-	3,995	-	-	-	3,995
\$	-	16,468	-	-	-	16,468
Agricultural purposes and fertilizer plants..... tons	-	595,421	-	-	-	595,421
\$	-	1,206,639	-	-	-	1,206,639
Other uses..... tons	-	41,353	17,548	-	-	58,901
\$	-	135,439	95,994	-	-	231,433
Crushed stone for manufacture of artificial stone..... tons	-	2,000	855	-	-	2,855
\$	-	10,000	5,691	-	-	15,691
Roofing granules..... tons	61,109	-	-	-	2,231	63,340
\$	324,358	-	-	-	36,517	360,875
Poultry grit..... tons	926	10,269	8,769	-	-	19,964
\$	9,105	67,857	48,417	-	-	125,379
Stucco dash..... tons	438	2,230	3,920	-	-	6,588
\$	5,245	26,760	34,320	-	-	66,925
Terrazzo chips..... tons	-	1,313	9,891	-	-	11,204
\$	-	6,492	110,360	-	-	116,852
Rubble and riprap..... tons	787,072	232,993	-	181,467	345	1,201,877
\$	933,118	243,082	-	292,822	863	1,469,885
Crushed Stone:						
Concrete aggregate..... tons	53,395	2,918,377	-	26,037	-	2,997,809
\$	81,445	2,972,080	-	62,899	-	3,116,424
Road metal..... tons	104,199	4,421,853	-	42,649	-	4,568,701
\$	215,772	4,256,337	-	86,773	-	4,558,882
Railroad ballast..... tons	-	666,874	-	311,451	-	978,325
\$	-	566,742	-	407,629	-	974,371
Total ² tons	1,042,928	10,003,142	68,347	577,887	4,339	11,696,643
\$	3,779,436	12,523,275	528,529	1,063,829	51,484	17,948,553

1. Includes all igneous rock.

2. Does not include limestone used in Canadian lime and cement industries but includes marl used for agricultural purposes.

TABLE 416. Production of Stone for Building Purposes, Chemical use, Cement Manufacture, Concrete Aggregate, Road Metal and Railroad Ballast, 1939-1948

Year	Building stone	For chemical purposes ¹	For concrete aggregate	For road metal	For railroad ballast	For cement manufacture ²
1939.....	tons 71,288 \$ 1,344,340	577,278 523,579	1,344,636 1,109,028	2,131,306 1,773,337	600,266 522,882	1,407,099 -
1940.....	tons 97,336 \$ 722,514	725,685 681,796	2,673,078 2,171,487	2,300,613 1,885,744	896,408 741,772	1,784,291 -
1941.....	tons 54,262 \$ 653,077	965,690 889,574	2,581,583 1,986,226	2,958,613 2,484,393	446,505 322,348	2,113,618 -
1942.....	tons 24,897 \$ 361,781	1,236,044 1,651,982	2,924,737 2,424,357	2,275,706 1,877,473	683,317 527,814	2,186,248 -
1943.....	tons 17,087 \$ 314,428	1,329,226 1,330,127	1,981,222 1,727,889	2,108,428 1,989,509	852,928 704,389	1,994,202 -
1944.....	tons 23,142 \$ 396,202	1,109,362 1,170,372	1,852,335 1,600,692	1,498,258 1,352,796	869,042 688,471	1,939,900 -
1945.....	tons 56,711 \$ 751,401	1,051,514 1,215,169	1,908,460 1,596,256	1,552,839 1,468,045	920,987 678,205	1,919,858 -
1946.....	tons 70,928 \$ 1,411,298	871,148 1,064,065	2,473,643 2,154,069	2,472,033 2,215,167	1,127,775 971,595	2,625,008 -
1947.....	tons 102,841 \$ 2,098,865	1,204,601 1,746,172	3,178,063 3,336,871	4,177,636 4,007,730	898,612 774,878	3,100,829 -
1948.....	tons 80,113 \$ 2,296,320	975,661 1,452,611	2,997,809 3,116,424	4,568,701 4,558,882	978,325 974,371	3,528,324 -

1. Does not include limestone used in Canadian lime industry which totalled 1,792,700 tons in 1948.

2. Includes shale. In 1948 this production totalled 78,377 tons.

TABLE 417. Imports and Exports of Stone, by Kinds, 1947 and 1948

	1947		1948	
	Quantity	Value	Quantity	Value
		\$		\$
IMPORTS				
Building stone, n.o.p.	cwt. 383,012	193,744	705,801	387,279
Curling stones and handles therefor.....	pair 1,113	35,834	1,729	57,983
Granite, rough, not hammered or chiselled.....	-	179,813	-	156,196
Granite, sawn only.....	-	32,306	-	40,571
Granite, manufactures of, n.o.p.	-	22,537	-	23,528
Marble, rough, not hammered or chiselled.....	-	104,585	-	81,809
Marble, sawn or sand rubbed, not polished.....	-	109,977	-	95,431
Marble, not further manufactured than sawn for tombstones.....	-	56,712	-	64,129
Marble, manufactures of, n.o.p.	-	27,043	-	10,291
Refuse stone.....	ton 935,988	780,011	91,898	61,487
Slate roofing.....	sq. 603	15,844	438	11,472
Slate mantels and manufactures of slate, n.o.p.	-	47,904	-	64,921
Chalk, china, cornwall or cliff stone and mica schist.....	-	24,637	-	24,647
Mineral wool.....	ton 4,331	417,450	55	8,795
Whiting, gilders' whiting and Paris white.....	ton 18,463	379,401	17,120	372,321
Manufactures of stone, n.o.p.	-	90,162	-	733,746
Chalk, prepared.....	-	5,641	-	6,689
Pumice and pumice stone and lava tufa.....	-	62,063	-	108,684
Grindstones, not mounted and not less than 36 inches in diameter.....	No. 667	65,160	806	62,422
Grindstones, n.o.p.	No. 905	5,120	680	5,318
Burrstones, rough, in blocks.....	No. 49	1,612	9	347
Ganister.....	cwt. 7,991	3,211	4,596	1,312
Total	-	2,660,767	-	2,379,378
EXPORTS				
Crushed stone.....	ton 779	1,592	1,346	4,559
Granite and marble, unwrought.....	ton 4,500	65,447	5,124	99,434
Dressed stone of all kinds.....	-	14,997	-	11,520
Grindstones, manufactured.....	-	24,884	-	21,619
Total	-	106,920	-	137,132

TABLE 418. Wage-earners in the Stone Quarrying Industry, by Months, 1947 and 1948

Month	1947			1948		
	Quarry		Dressing works	Quarry		Dressing works
	Male	Female	Male	Male	Female	Male
January	1,416	2	602	1,475	3	598
February	1,413	2	621	1,428	3	631
March	1,617	3	665	1,517	3	652
April	1,896	3	660	2,052	3	701
May	2,564	3	731	2,430	3	714
June	2,742	4	747	2,553	4	733
July	2,817	4	767	2,582	2	714
August	2,717	3	753	2,612	2	726
September	2,620	3	764	2,542	2	688
October	2,607	2	734	2,510	2	702
November	2,338	2	724	2,307	1	672
December	1,903	2	676	2,008	1	623
Average	2,240	4	706	2,170	4	682

GRANITE

Granite as applied to commercial stone, includes nearly all igneous rocks as well as metamorphic rocks of igneous origin, which may be quarried for use as building, monumental or crushed stone. In the quarrying of granite for building or monumental stone there is a large quantity of irregularly shaped pieces which are used for breakwaters, road fill and crushed rock for concrete aggregate. During 1948 a large tonnage of comparatively low cost granite was removed from the railway right of way in British Columbia. This rock was used for railway fill.

TABLE 419. Production of Granite¹, 1939-1948

Year	Short tons	\$	Year	Short tons	\$
1939	1,102,395	2,119,501	1944	269,964	1,303,790
1940	1,147,747	1,884,410	1945	221,630	1,284,748
1941	600,922	1,498,786	1946	319,354	2,006,297
1942	1,366,425	1,946,249	1947	551,527	3,175,364
1943	780,422	1,522,072	1948	1,042,928	3,779,436

1. Includes all igneous rock.

LIMESTONE

Quarries for the production of limestone for building purposes are worked in Quebec, Ontario, and Manitoba. Modern requirements of the building stone industry call for blocks of stone of large dimensions from which are sawn slabs and blocks of the exact size required for constructing the building. Although limestone is abundant in Canada the heavily bedded variety of desirable texture, free from cracks and other defects, and capable of being carved and otherwise worked, is not plentiful.

For industrial use limestone is marked in a variety of forms ranging from huge squared blocks of dimension stone used in construction to extremely fine dust chiefly as a mineral filler. For certain uses (in the wood pulp industry, for example) the limestone quarried requires little or no processing, but most of the output is crushed and screened for use as road metal, concrete aggregate, railroad ballast, and as flux in metallurgical plants. Large quantities are used in the manufacture of Portland cement, lime and various chemical products. Most of the limestone used in chemical and metallurgical industries is of the high calcium variety, but dolomite is rapidly increasing in importance as an industrial raw material.

The use of limestone in agriculture is capable of very extensive development. Though the necessity for applying limestone or lime to agricultural land to remedy deficiencies of calcium and magnesium, to neutralize soil acidity, and to maintain or increase soil fertility has been emphasized for many years, the quantity so used in Canada is still relatively small, whereas the agricultural use of limestone could well constitute one of its most important uses both from the economic and tonnage viewpoints.

TABLE 420. Production of Limestone¹, 1939-1948

Year	Short tons	\$	Year	Short tons	\$
1939.....	4,149,589	3,817,551	1944.....	5,565,286	5,528,459
1940.....	6,108,591	5,126,075	1945.....	5,677,192	6,284,379
1941.....	7,151,049	6,057,727	1946.....	7,217,600	8,178,513
1942.....	6,442,583	6,468,525	1947.....	9,497,754	11,966,520
1943.....	6,265,181	6,105,749	1948.....	10,003,142	12,523,275

1. Includes dolomite and marl; production of marl totalled 22,913 tons in 1943; 19,848 tons in 1944; 14,148 tons in 1945; 20,363 tons in 1946; 27,368 tons in 1947 and 22,323 tons in 1948.

MARBLE

Canada is well supplied with deposits of marble, and quarries are operated in Quebec, Ontario, Manitoba, and British Columbia. The products in recent years have been mostly terrazzo chips, stucco dash, poultry grit, marble flour, whiting substitute, rubble, and material for making artificial stone, but in 1948 there was a greater production of squared blocks for sawing into slabs for interior decorative use than for many years.

In Quebec, clouded grey marbles and a black marble are obtained in the quarries of Missisquoi Stone and Marble Company, Limited, at Philipsburg, near the foot of Lake Champlain. Brown marble for counters and wainscoting is obtained from the building stone quarries in the Trenton limestone at St. Marc des Carrières, Portneuf county. Orford Marble Company, Limited produces red, green, and grey serpentinous marble near North Stukely, Shefford county. The product is mainly terrazzo, but several blocks have been quarried to test the soundness and beauty of colouring, and if results are satisfactory it is intended to produce block marble at this quarry in the near future. White dolomite is quarried and crushed by Canadian Dolomite Company, Limited, at Portage du Fort, Pontiac county, for terrazzo chips, stucco dash, artificial stone, and various other products.

In Ontario, black marble in blocks up to 40 inches thick is produced by Silvertone Black Marble Quarries, Limited, Ottawa, at St. Albert, 30 miles southeast of Ottawa. Buff, red, white, green, and black marbles are quarried north of Madoc by Karl Stocklasar, and by Connolly Marble, Mosaic and Tile Company, Limited, Toronto, for use as terrazzo. Verona Rock Products, Limited, Verona, produces poultry grit and stucco dash from white limestone. Bolender's, Limited (White Star mine) produces white terrazzo and poultry grit at Marmora.

In Manitoba, a number of highly coloured marbles are available along the Flin Flon and Hudson Bay railroads, and also at Fisher Branch and other places. Winnitoba Marble Company quarries small quantities of buff and purple marble at Fisher Branch for use as terrazzo.

In British Columbia, there are many deposits of marble, but there is only a small production of white by Marble and Associated Products from a quarry near Victoria, and by Beale Limestone Quarries on Texada Island.

There is a wide range in the price of marble depending upon the quality and rareness of colouring.

TABLE 421. Production of Marble, 1939-1948

Year	Short tons	\$	Year	Short tons	\$
1939.....	14,124	200,054	1944.....	11,829	85,374
1940.....	13,739	75,409	1945.....	13,388	113,337
1941.....	17,649	126,081	1946.....	21,796	201,817
1942.....	13,824	88,209	1947.....	45,574	326,605
1943.....	11,848	68,022	1948.....	68,347	528,529

SANDSTONE

Canadian sandstone has been utilized extensively in the construction of many important public buildings in Canada and is finding increasing favour as a material in the construction of the better type home. The rock occurs in Canada in a variety of colours, including white, reddish brown, yellow and grey. Shipments of sandstone were made in 1948 from quarries located in all of the provinces with the exception of Prince Edward Island, Manitoba, Saskatchewan and Alberta.

The greater part of the crude output in 1948 was employed as rubble and riprap and in the crushed state for concrete, highway construction and railroad ballasting. Sandstone in British Columbia, New Brunswick and Nova Scotia has been employed in the manufacture of abrasive wheels and sharpening stones; such production is included with natural abrasives manufacture. Crude, crushed or ground quartzite sold for fluxing purposes or as silica sand is included under quartz as production.

TABLE 422. Production of Sandstone, 1939-1948

Year	Short tons	\$	Year	Short tons	\$
1939.....	176,265	331,830	1944.....	146,766	223,453
1940.....	176,475	305,543	1945.....	291,430	466,397
1941.....	169,885	305,528	1946.....	495,777	778,213
1942.....	153,865	236,810	1947.....	792,900	975,394
1943.....	164,163	250,603	1948.....	577,887	1,065,829

SLATE

Canadian slate production in 1948 came entirely from the provinces of Quebec and British Columbia and represented shipments of the stone in the form of granules for roofing purposes, riprap and asphalt filling. No Canadian deposits of slate suitable for the production of high grade roofing slates or shingles have been reported as being under development in recent years.

TABLE 423. Production of Slate, 1939-1948

Year	Short tons	\$	Year	Short tons	\$
1939	1,149	6,760	1944.....	1,147	18,101
1940	1,113	7,522	1945.....	1,915	17,839
1941	1,296	12,562	1946.....	1,733	20,871
1942	1,369	16,801	1947.....	1,633	20,866
1943	1,336	17,733	1948.....	4,339	51,484

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ROOFING GRANULES

The greater part of the roofing granules output in Canada comes from Ontario deposits, the remainder from Quebec and British Columbia. More than half of the tonnage used is imported from the United States. Due to a change in tariff, January 1948, there was a slight drop in prices to Canadian consumers.

In Quebec, granules were made by Suzorite Company Limited from a deposit near McCarthy in Suzor township, 160 miles east of Senneterre. The suzorite rock, which contains pyroxenite, feldspar, apatite, and mica is treated at the company's plant at Cornwall, Ontario, where the mica is removed and the remaining material, crushed to granule size, is shipped to Canadian consumers. Large deposits of dark grey and small deposits of red and green slates occur near Granby and Richmond in the Eastern Townships of Quebec.

In Ontario, three deposits in the vicinity of Madoc, Hastings county, are quarried for granules. They are: a grey rhyolite deposit 5 miles northeast of Madoc; a black amphibole rhyolite, 4 miles northwest of Madoc, and a greenish grey basalt, 20 miles west of Madoc, near Havelock. Building Products Limited, the leading Canadian manufacturer of roofing granules, crushes and screens the rock from the first two quarries at a mill near Madoc, and from the other quarry, at a plant in Havelock. At the latter plant the granules from the three quarries are artificially coloured. It is the only granite colouring in Canada.

In British Columbia, G.W. Richmond quarried a dark grey slate at McNab Creek, Howe Sound, and a greenish siliceous rock at Bridal Falls, near Chilliwack. At Kapoor on southern Vancouver Island, O.M. Brown mined a grey black slate, and from an adjacent deposit, hard greenish rock. These two operators have crushing and screening plants in Vancouver and Victoria, respectively, where natural granules are produced and sold to roofing companies in the two cities.

Prices vary considerably depending upon the type of granule and upon whether the colour is natural or artificial. Imported granules average \$17.91 a ton, f.o.b. eastern Canadian plants for natural rocks and slates; \$22.21 for artificially coloured reds; \$22.93 for greens; \$24.90 for browns; and \$32.96 for blues.

2. SECONDARY PRODUCTION — THE STONE PRODUCTS INDUSTRY

In 1948 there were 150 stone dressing works whose operations were reported separately from the quarries. These plants were engaged chiefly in cutting or polishing Canadian or imported stone to produce finished monuments or cut and dressed stone for construction purposes. Retail establishments engaged only in selling and lettering monuments have not been included. Thirteen producers of rock wool were also included in this industry.

Output from this industry was valued at \$13,550,286 in 1948, an increase of 16.5 per cent over the total of \$11,634,684 reported for the previous year. The 60 works in Ontario accounted for 59 per cent of the total output and the 43 plants in Quebec for 25 per cent. The average number of employees was 1,862 who were paid \$4,126,838 in salaries and wages. Materials used in the cutting and dressing processes, including stone, cost \$4,547,067. The latter figure also includes the cost of materials used in the production of rock wool. Expenditures for fuel and electricity amounted to \$578,391.

TABLE 424. Principal Statistics of the Stone Products Industry, 1944-1948

Year	Number of plants	Average number of employees	Salaries and wages	Cost of fuel and electricity at works	Cost of materials at works	Gross selling value of products at works
			\$	\$	\$	\$
1944.....	142	854	1,426,262	160,725	1,670,718	4,370,430
1945.....	144	1,055	1,665,593	196,703	1,706,599	5,199,120
1946.....	147	1,541	2,643,298	293,538	2,906,528	9,063,895
1947.....	151	1,815	3,426,534	414,430	4,207,405	11,634,684
1948.....	150	1,862	4,126,838	578,391	4,547,067	13,550,286
Per cent change 1948 from 1947.....	-	+ 2.6	+ 20.4	+ 39.6	+ 8.1	+ 16.5

Note. Profits or losses cannot be calculated from the above figures as data are not available for general expense items, such as interest, rent, depreciation, taxes, insurance, advertising, etc.

TABLE 425. Production from the Stone Products Industry, by Provinces, 1947 and 1948

	Granite		Marble		Marble chips and dust	Limestone		Finished monuments, lettered only	Other products	Total
	Monuments	For building purposes	Monuments	For building purposes		Monuments and bases	For building purposes			
(Dollars)										
Prince Edward Island and New Brunswick:										
1947.....	185,062	-	28,931	-	-	-	-	2,210	1,120	217,323
1948.....	187,630	-	32,800	590	-	-	-	2,300	4,806	228,126
Nova Scotia:										
1947.....	185,816	4,000	31,764	-	-	-	-	9,217	319,919	550,716
1948.....	164,283	7,058	40,317	-	-	-	-	67,777	424,924	704,359
Quebec:										
1947.....	1,151,453	86,435	22,878	64,135	-	960	441,323	29,532	839,947	2,636,663
1948.....	1,096,667	193,043	23,883	114,202	-	563	520,158	66,623	1,350,331	3,365,470
Ontario:										
1947.....	1,313,567	57,060	248,208	123,484	49	46,568	1,427,497	84,901	3,783,650	7,084,984
1948.....	1,426,736	210,089	169,235	220,689	-	9,498	1,725,681	73,069	4,144,819	7,979,816
Manitoba:										
1947.....	62,089	9,154	11,561	18,601	15	1,810	608	47,146	1,123	152,107
1948.....	97,396	13,321	22,274	25,672	39	2,438	-	18,495	2,740	182,375
Saskatchewan:										
1947.....	95,008	6,205	78,516	3,980	2,854	45,481	39,730	6,175	139,035	416,984
1948.....	88,439	34,000	98,394	2,820	4,325	49,500	35,125	8,335	129,667	450,605
Alberta:										
1947.....	268,737	15,000	9,339	5,000	2,211	-	11,651	4,100	7,167	323,205
1948.....	225,501	6,436	8,982	868	238	-	11,807	8,090	66,937	328,859
British Columbia:										
1947.....	83,572	52,861	1,730	38,706	225	-	304	70,041	5,263	252,702
1948.....	130,702	63,306	1,277	91,252	210	-	1,600	270	22,059	310,676
Canada:										
1947.....	3,345,304	230,715	432,927	253,906	5,354	94,819	1,921,113	253,322	5,097,224	11,634,684
1948.....	3,417,354	527,253	397,162	456,093	4,812	61,999	2,294,371	244,959	6,146,283	13,550,286

TABLE 426. Total Production of Dressed Building Stone, 1939-1948

Year	Granite		Marble		Limestone		Sandstone from quarries	Total
	From quarries	From dressing works	From quarries	From dressing works	From quarries	From dressing works		
	(Dollars)							
1939.....	561,253	438,619	145,618	174,275	349,547	664,270	101,448	2,435,030
1940.....	255,527	159,427	19,680	218,271	192,183	446,441	55,139	1,346,668
1941.....	284,803	92,899	51,535	148,294	241,298	384,265	15,016	1,218,110
1942.....	108,807	121,450	19,476	139,109	169,382	102,388	8,600	669,212
1943.....	103,691	65,868	10,745	96,630	172,198	36,021	1,300	486,453
1944.....	83,485	31,430	18,135	80,803	214,037	98,866	34,750	561,506
1945.....	97,098	58,829	18,224	132,498	464,411	290,618	78,000	1,139,678
1946.....	232,835	117,656	17,184	169,759	883,937	909,370	73,101	2,403,842
1947.....	456,000	230,715	20,725	253,906	1,195,635	1,921,113	99,014	4,177,108
1948.....	682,494	527,253	67,710	456,093	1,156,020	2,294,371	87,600	5,271,541

TABLE 427. Total Production of Dressed Monumental and Ornamental Stone, 1939-1948

Year	Granite		Marble		Limestone		Sandstone from quarries	Total
	From quarries	From dressing works	From quarries	From dressing works	From quarries	From dressing works		
	(Dollars)							
1939.....	260,375	1,513,958	800	129,623	3,321	53,309	325	1,961,711
1940.....	223,203	1,416,298	-	167,805	2,218	29,861	-	1,839,385
1941.....	291,643	1,582,016	-	186,269	2,339	31,820	400	2,094,487
1942.....	356,459	1,602,854	-	197,189	4,513	23,435	-	2,184,450
1943.....	392,828	1,601,756	-	227,289	4,700	27,536	-	2,254,109
1944.....	609,542	1,871,157	-	290,638	4,575	48,870	918	2,825,700
1945.....	636,787	2,183,799	-	317,197	5,700	48,715	-	3,192,198
1946.....	883,336	2,855,781	-	401,197	7,720	63,047	-	4,211,081
1947.....	1,242,612	3,345,304	-	432,927	4,548	94,819	-	5,120,210
1948.....	1,238,987	3,417,354	-	397,162	1,500	61,999	-	5,117,002

TABLE 428. Production of Mineral Wool, 1939-1948

Year	Selling value at works	Year	Selling value at works
	\$		\$
1939.....	525,998	1944.....	1,617,420
1940.....	935,229	1945.....	1,839,122
1941.....	1,185,324	1946.....	4,098,099
1942.....	1,417,258	1947.....	4,966,388
1943.....	1,707,501	1948.....	5,828,896

TABLE 429. Imports of Mineral Wool and Glass Wool, 1939-1948

Year	Mineral wool		Glass wool		Total	
	Pounds	\$	Pounds	\$	Pounds	\$
1939.....	1,820,763	44,860	Included with mineral wool		1,820,763	44,860
1940.....	2,082,589	52,233			2,082,589	52,233
1941.....	2,633,544	74,791			2,633,544	74,791
1942.....	1,613,914	54,776			1,613,914	54,776
1943.....	1,839,670	72,780			1,839,670	72,780
1944.....	2,619,513	147,862	-		2,619,513	147,862
1945.....	8,989,862	460,677			-	649,373
1946.....	11,733,377	464,880			-	872,946
1947.....	8,663,106	417,450			-	938,236
1948.....	111,152	8,795	20,143,761	1,303,099	20,254,913	1,311,894

TABLE 430. Production of Mineral Wool, by Grades, 1948

	Quantity	Selling value at works
		\$
4-inch batts..... sq. ft.	1,241,759	65,893
3-inch batts..... sq. ft.	28,448,637	1,381,719
2-inch batts..... sq. ft.	63,728,890	2,138,894
1-inch batts..... sq. ft.	8,500	239
Granulated..... cu. ft.	9,082,983	2,010,855
Bulk or loose wool..... cu. ft.	1,056,845	161,328
Industrial wool (both loose and granulated)..... cu. ft.	350,913	69,968
Total.....	-	5,828,896

CHAPTER TEN

CONTRACT DRILLING IN THE CANADIAN MINING INDUSTRY

Section I

Diamond Drilling of Deposits Other than Fuels

During 1948 there were 38 firms engaged in contract diamond drilling of Canadian mineral deposits, other than fuels, compared with 48 operators in 1947. The income received from drilling operations by these firms totalled \$5,801,117, a decline of 12.6 per cent from the income of \$6,635,476 in the preceding year. The average number of employees in 1948 was estimated at 1,281 compared with 1,838 in 1947 and the amount of salaries and wages paid was \$2,723,530 compared with \$3,179,473 in 1947.

The contractors drilled a footage of 4,027,977 compared with 4,072,622 in the previous year. The value of borts, ballas, carbons, castset bits, etc., purchased by diamond drilling contractors during 1948 amounted to \$1,212,312 compared with \$1,418,831 in 1947.

Equipment owned by the operators included 323 air or steam-driven drills, 405 gasoline-driven drills, and 3 electric drills.

TABLE 431. Contract Diamond Drilling Operations, 1939-1948 (Drilling operations conducted by contractors who employed diamond drills only and which were confined chiefly to the testing of metalliferous deposits)

Year	Footage drilled	Income from drilling	Average number of employees	Total salaries and wages paid
		\$		\$
1939	2,063,292	3,013,249	2,920	1,615,615
1940	2,422,948	3,021,629	1,350	1,575,786
1941	2,793,420	3,122,487	1,455	1,535,609
1942	2,960,364	3,147,532	1,019	1,597,040
1943	2,649,708	3,072,481	896	1,493,944
1944	3,468,797	4,970,247	1,468	2,461,813
1945	5,262,438	8,650,864	2,263	3,906,545
1946	6,260,513	11,786,846	2,829	5,285,695
1947				
Nova Scotia.....	7,322	22,130	9	8,078
New Brunswick	17,222	37,495	11	11,936
Quebec.....	1,404,277	2,593,954	627	1,169,418
Manitoba.....	1,493,597	2,605,154	836	1,359,526
Ontario.....	198,912	421,573	88	195,597
Saskatchewan.....	76,990	146,425	40	67,711
Alberta.....	3,325	16,201	17	9,263
British Columbia.....	819,001	673,967	127	296,647
Yukon.....	—	—	5	13,136
Northwest Territories.....	51,976	118,577	78	48,161
Canada.....	4,072,622	6,635,476	1,838	3,179,473
1948				
Nova Scotia.....	6,961	9,120	2	2,317
New Brunswick	2,604	22,728	9	9,162
Quebec.....	1,115,550	1,793,611	362	805,702
Manitoba.....	1,314,308	2,289,161	569	1,169,356
Ontario.....	196,899	361,674	90	186,572
Saskatchewan.....	132,893	228,338	34	95,517
Alberta.....	39,705	168,498	63	85,404
British Columbia.....	1,131,745	748,771	116	15,767
Yukon.....	6,000	22,563	8	279,661
Northwest Territories.....	81,312	156,653	28	74,072
Canada.....	4,027,977	5,801,117	1,281	2,723,530

TABLE 432. Value of Stones, Readysset and Castset Bits Purchased by Contractors, 1939-1948

Year	Value	Year	Value
	\$		\$
1939.....	607,806	1944.....	810,085
1940.....	881,085	1945.....	2,018,768
1941.....	861,253	1946.....	2,192,615
1942.....	634,233	1947.....	1,418,831
1943.....	637,070	1948.....	1,212,312

TABLE 433. Drilling Completed on Auriferous Quartz Deposits (Gold Mines), 1947 and 1948

	Footage drilled	
	1947	1948
Diamond drilling for exploration and testing:		
By mining companies with their own personnel and equipment	755,121	667,469
By diamond drilling contractors ¹	2,521,825	1,513,394
Other diamond drilling:		
Blast hole diamond drilling:		
By mining companies with their own personnel and equipment	209,599	215,772
By diamond drilling contractors ¹	293,965	435,563
Drilling by percussion or other machines ²	24,354,773	32,187,104

1. Included in Table 431.

2. Not complete as records are unavailable at certain mines.

Value of diamonds purchased by gold mining companies in 1948 totalled \$306,078 compared with \$337,187 in 1947.

TABLE 434. Drilling Completed on Copper-Gold-Silver and Nickel-Copper Deposits, 1947 and 1948

	Footage drilled	
	1947	1948
Diamond drilling for exploration and testing:		
By mining companies with their own personnel and equipment	102,849	158,188
By diamond drilling contractors ¹	632,227	525,735
Other diamond drilling:		
Blast hole diamond drilling:		
By mining companies with their own personnel and equipment.....	1,046,819	1,393,647
By diamond drilling contractors ¹	-	532
Drilling by percussion or other machines ²	14,195,598	18,288,918

1. Included in Table 431.

2. Not complete as records are unavailable at certain mines.

Value of diamonds purchased by copper-gold-silver and nickel-copper mining companies in 1948 totalled \$340,930 compared with \$339,434 in 1947.

TABLE 435. Drilling Completed on Silver-Lead-Zinc and Silver-Cobalt Deposits, 1947 and 1948

	Footage drilled	
	1947	1948
Diamond drilling for exploration and testing:		
By mining companies with their own personnel and equipment.....	33,977	123,626
By diamond drilling contractors ¹	205,178	155,081
Other diamond drilling:		
Blast hole diamond drilling:		
By mining companies with their own personnel and equipment.....	385,889	689,726
By diamond drilling contractors ¹	16,828	1,319
Drilling by percussion or other machines ²	936,764	1,593,219

1. Included in Table 431.

2. Not complete as records are unavailable at certain mines.

Value of diamonds purchased by silver-lead-zinc and silver-cobalt companies in 1948 amounted to \$65,982.

TABLE 436. Drilling Completed on Other Metal-Bearing Deposits, 1947 and 1948

	Footage drilled ¹	
	1947	1948
Diamond drilling for exploration and testing:		
By mining companies with their own personnel and equipment.....	27,192	19,677
By diamond drilling contractors ²	52,165	62,209
Other diamond drilling:		
Blast hole diamond drilling:		
By mining companies with their own personnel and equipment.....	5,125	-
By diamond drilling contractors ²	26,099	15,056
Drilling by percussion or other machines.....	461,105	575,745

1. Included in Table 431.

2. Includes drilling on iron, chromite, molybdenite and mercury deposits; exclusive of drilling on pitchblende deposits.

TABLE 437. Drilling Completed on Asbestos Deposits, 1947 and 1948

	Footage drilled	
	1947	1948
Diamond drilling for exploration and testing:		
By mining companies with their own personnel and equipment.....	39,870	59,157
By diamond drilling contractors ¹	114,086	89,409
Other diamond drilling:		
Blast hole diamond drilling:		
By mining companies with their own personnel and equipment.....	30,596	17,133
By diamond drilling contractors ¹	7,128	-
Drilling by percussion or other machines ²	3,755,551	4,133,078

1. Included in Table 431.

2. Not complete as data are not reported by some firms.

Diamonds purchased by asbestos mining companies in 1948 cost \$30,640 compared with \$58,613 in 1947.

Note: The total footage of contract drilling recorded in Tables 434 to 437 does not necessarily agree with the corresponding totals shown in Table 431 as drilling data are incomplete or unobtainable from some mining firms.

Section II

CONTRACT DRILLING FOR FUELS

There were 68 contractors in 1948 who reported drilling for petroleum or natural gas. The footage drilled by them totalled 2,154,208 and the income from the operations amounted to \$15,643,817 compared, respectively, with 1,253,794 feet and \$7,484,243 in 1947. Of the footage drilled during the year, 1,828,902 feet were by rotary type drills and 325,306 feet by cable drills. The average number of employees was 1,598, to whom \$3,956,630 were paid in salaries and wages.

Drilling done by oil companies with their own equipment is not included in this report.

TABLE 438. Drilling Conducted During 1947 and 1948 by Contractors for Petroleum, Natural Gas, and for Other Purposes not Included in Section I of this Chapter

Province	Footage drilled			Footage drilled			Footage drilled			Gross income from drilling	Average number of employees	Total salaries and wages paid
	For petroleum			For gas			For other purposes					
	Type of drill			Type of drill			Type of drill					
	Cable	Diamond	Rotary	Cable	Diamond	Rotary	Cable	Diamond	Rotary			
	(feet)			(feet)			(feet)			\$	No.	\$
1947												
Nova Scotia	-	-	-	-	-	-	10,739	-	-	65,165	15	14,933
Quebec	10,230	-	-	-	-	-	-	-	-	25,059	11	10,499
Ontario	51,917	-	-	182,117	-	-	18,248	-	-	505,773	136	172,930
Manitoba	-	-	-	-	-	-	2,038	-	-	15,799	3	6,128
Saskatchewan	-	-	127,628	-	-	5,900	7,505	-	8,246	692,111	152	320,917
Alberta	1,000	1,229	763,050	-	-	14,963	519	1,190	44,510	6,136,872	698	1,527,927
British Columbia	-	-	2,705	-	-	-	-	-	-	43,464	5	10,295
Canada	63,147	1,229	893,383	182,117	-	20,863	39,049	1,190	52,816	7,484,243	1,020	2,063,629
1948												
Nova Scotia	-	-	-	-	-	-	11,205	-	-	62,742	12	18,233
Ontario	61,151	-	-	227,557	-	-	17,013	-	-	677,641	140	261,607
Manitoba	-	-	-	-	-	-	3,474	-	-	23,787	4	8,351
Saskatchewan	-	-	100,939	-	-	3,900	4,906	-	-	436,957	92	136,946
Alberta	-	-	1,548,406	-	-	24,011	-	-	135,960	14,303,428	1,330	3,501,443
British Columbia	-	-	15,686	-	-	-	-	-	-	139,262	20	30,050
Canada	61,151	-	1,665,031	227,557	-	27,911	36,598	-	135,960	15,643,817	1,598	3,956,630

DIRECTORY OF FIRMS, 1948

In the following pages the names and addresses of all the principal operators in the Canadian mining industry are given; also the location of the properties worked in 1948.

The Auriferous Quartz Mining Industry

Name	Head Office Address	Location
NOVA SCOTIA:		
Killag Sweet Gold Mines Ltd.	Sheet Harbour,	Halifax Co.
Redden, Wm. K.	Upper Stewiacke	Halifax Co.
Smith, A. J.	East Chezzetcook	Lake Catches
QUEBEC:		
Abitibi Ventures Limited.....	680 Ouest rue Sherbrooke, Montreal.....	Abitibi
Alger Gold Mines Ltd.	357 Bay St., Toronto, Ontario	Cadillac Tp.
Amalgamated Chibougamau Gold Mines Ltd.	215 St. James St. W., Montreal	Roy Tp.
Anglo-Huronian Ltd.	80 King St. W., Toronto, Ontario.....	
Anglo Rouyn Mines Ltd.	100 Adelaide St., Toronto, Ontario.....	Rouyn Tp.
Angus Mines Ltd.	7000 Jeanne Mance St., Montreal	Cadillac
Auf Der Maur Corporation.....	313 Elm Ave., Montreal	Charlevoix Co.
Bachelor Lake Gold Mines Ltd.	330 Bay St., Toronto, Ontario	Bachelor Lake
Barmont Mines Ltd.	276 St. Jacques St. Ouest, Montreal	Barrault Tp.
Batch River Gold Mines Ltd.	330 Bay St., Toronto, Ontario	Lesueur Tp.
Beau Rand Gold Mines Ltd.	320 Bay St., Toronto, Ontario	Beauchastel Tp.
Belle-Clare Mining Synd.	Box 1192, Rouyn	Aguebelle Tp.
Bellevue Gold Mines Ltd.	100 Adelaide St. W., Toronto, Ontario.....	Freville Tp.
Bellevue Gold Mines Ltd.	Bellevue	Belleterre
Bellevue Gold Mines Ltd.	1700 Royal Bank Building, 360 St. James St. W., Montreal	Louvicourt
Bevcourt Gold Mines Ltd.	Beauveville Est.	
Bolduc, Seraphin.....	21 King St. E., Toronto, Ontario.....	Dasserrat Tp.
Bordulac Mines Ltd.	New Liskeard, Ontario	Guillet Tp.
Bromore Quebec Mines Ltd.	603 Royal Bank Building, 2-8 King St. E., Toronto, Ontario.....	Louvicourt Tp.
Buffadison Gold Mines Ltd.	330 Bay St., Toronto, Ontario	Blondeau Tp.
Blondor Quebec Mines Ltd.	302 Bay St., Toronto, Ontario	Duplessis Tp.
Bobjo Mines Ltd.	Box 300, Malartic	Duchess Tp.
Bourcier Kuntz Minerals Exploration Part.	411 Canada Cement Building, Montreal	Obalski Tp.
Cache Bay Chibougamau Mines Ltd.	25 King St. W., Toronto, Ontario	Malartic Tp.
Canadian Malartic Gold Mines Ltd.	26 St. James St. W., Montreal	Fournière Tp.
Caron Malartic Gold Mines Ltd.	407 McGill St., Montreal	Bourlamaque Tp.
Centremaque Gold Mines Ltd.	465 St. John St., Montreal	Clericy Tp.
Central Mining Corp.	24 King St. W., Toronto, Ontario	Bourlamaque Tp.
Chimo Gold Mines Ltd.	73 Adelaide St. W., Toronto, Ontario	Vauquelin Tp.
Chuco Gold Mines Ltd.	Duparquet	Duparquet
Consolidated Beattie Mines Ltd.	717 Transportation Building, Montreal	Cadillac Tp.
Consolidated Central Cadillac Mines Ltd.	Box 970, Noranda	Destor Tp.
Consolidated Duquesne Mining Co. Ltd.	Trail, British Columbia	Guerschville Tp.
Consolidated Mining & Smelting Co. of Canada Ltd.	67 Yonge St., Toronto, Ontario.....	Senneville Tp.
Crohnor Pershing Mines Ltd.	Senneville	Senneville Tp.
Cross Fault Gold Mines Ltd.	45 Richmond St. W., Toronto, Ontario	Bourlamaque Tp.
D'Aragon Mines Ltd.	11 King St. W., Toronto, Ontario.....	Lesueur and Louvicourt Tps.
Dome Exploration Co. (Quebec) Ltd.	Bourlamaque	Rouyn Tp.
Donalda Mines Ltd.	625 Burnside St., Montreal	Bourlamaque Tp.
Donnaque Gold Mines Ltd.	1865 Danforth Ave., Toronto, Ontario	Dubuisson Tp.
Dubuisson Mines Ltd.	516 Canada Cement Building, Montreal	Malartic
East Amphi Gold Mines Ltd.	Malartic	Leparquet
East Bay Gold Ltd.	Box 456, Noranda	Fournière Tp.
East Malartic Mines Ltd.	355 St. James St. W., Montreal	Noranda
Elder Mines Ltd.	11 King St. W., Toronto, Ontario	Rouyn Tp.
Eldona Gold Mines Ltd.	28½ Adelaide St. E., Toronto, Ontario	Ducos Tp.
Emil Oil Mining Ltd.	Cassier Postal 1229, Rouyn	Dasserrat Tp.
Fayolle, Antoine.....	25 King St. W., Toronto, Ontario	Louvicourt Tp.
Frokar Gold Mines Ltd.	Rouyn	Dasserrat Tp.
Gilmont Mines Ltd.	85 Richmond St. W., Toronto, Ontario	Duvernay Tp.
Goldvue Mines Ltd.	132 St. James St. W., Montreal	Rouyn Tp.
Glencona Mining Company Limited.....	132 St. James St. W., Montreal	Bourlamaque Tp.
Goldora Mines Ltd.	1501 Star Building, Toronto, Ontario	Lesueur Tp.
Gunner Gold Mines Ltd.	100 Adelaide St. W., Toronto, Ontario	Chibougamau Tp.
Grand Chibougamau Mines Ltd.	21 King St. E., Toronto, Ontario	Hebecourt Tp.
Hebecourt Prospecting & Mining Co.	132 rue St. Jacques, Montreal	Hebecourt Tp.
Hebecourt Gold Mines Ltd.	603 Royal Bank Building, Toronto, Ontario.....	Lesueur Tp.
Hewbet Mines Ltd.	100 Adelaide St. W., Toronto, Ontario	Joannes Tp.
Heva Gold Mines Ltd.	12 Richmond St. E., Toronto, Ontario	Lesueur Tp.
Hewfran Gold Mines Ltd.	357 Bay St., Toronto, Ontario	Joannes Tp.
Hosco Gold Mines Ltd.	85 Richmond St. W., Toronto, Ontario	
International Mining Corp. (Canada) Ltd.	465 St. John St., Montreal	Piedmont Tp.
Jervis Mines Ltd.	25 King St. W., Toronto, Ontario	Rouyn Tp.
Joker-Quebec Mines Ltd.	215 St. James St. W., Montreal	Louvicourt Tp.
Kayrand Mining & Development Co. Ltd.	25 King St. W., Toronto, Ontario.....	
Keneco Explorations Ltd.	Arnfield	Arnfield
Lake Wassa Mining Corp.	490 LaSalle	Bourlamaque Tp.
Lamaque Mining Co. Ltd.	1700 Royal Bank Building, 360 St. James St. W., Montreal	Louvicourt Tp.
Lencourt Gold Mines Ltd.	67 Yonge St., Toronto, Ontario	Abitibi Tp.
La Roncière Gold Mines Ltd.	1604 edifice Aldred, Montreal	Louvicourt Tp.
Louvicourt Goldfield Corporation.....	330 Bay St., Toronto, Ontario	Urban Tp.
Macho River Gold Mines Ltd.	355 St. James St. W., Montreal	Dubuisson and Fournière Tps.
Malartic Gold Fields Ltd.	85 Richmond St. W., Toronto, Ontario	Duverney Tp.
Mallich Quebec Gold Mines Ltd.	37 St. James St. W., Montreal	Dandienne
Marco Mining Corp. Ltd.	904 Bank of Montreal Building, Toronto, Ontario.....	Bachelor Lake
Mistassini Lead Corp.	Drawer 988, Haileybury, Ontario.....	Rouyn Tp.
McWatters Gold Mines Limited	350 Bay St., Toronto, Ontario	
Mining Corporation of Canada Limited		

The Auriferous Quartz Mining Industry — Continued

Name	Head Office Address	Location
QUEBEC — Concluded:		
Mylamaque Mines Ltd.	40 Adelaide St. W., Toronto, Ontario.	Bourlamaque Tp.
New Marlon Gold Mines Ltd.	24 King St. W., Toronto, Ontario	Rouyn Tp.
New Rouyn Merger Mines Ltd.	603-4 Royal Bank Building, 2-8 King St. E., Toronto, Ontario	Rouyn Tp.
New Thurbou Mines Ltd.	66 King St. W., Toronto, Ontario	Abitibi Tp.
Norbenite Malarctic Mines Ltd.	330 Bay St., Toronto, Ontario.	Vassan and Malarctic Tps.
O'Brien Gold Mines Ltd.	Kewagama.	Cadillac Tp.
Oneonta Pershing Mines Ltd.	80 Richmond St. W., Toronto, Ontario	Vauquelin Tp.
Oleary Malarctic Mines Ltd.	Box 535, Rouyn.	various
Ordala Mines Ltd.	171 Yonge St., Toronto, Ontario.	Noranda
Osisko Lake Mines Ltd.	25 King St. W., Toronto, Ontario	Rouyn Tp.
Pen-Rey Gold Mines Ltd.	62 Richmond St. W., Toronto, Ontario.	Rouyn Tp.
Perron Gold Mines Ltd.	Perron.	Perron
Powell Rouyn Gold Mines Ltd.	Box 200, Noranda.	Noranda
Prahova Mines Ltd.	276 St. Jacques Ouest, Montreal	Barraute Tp.
Quebec Explorers Ltd.	132 St. Jacques St. W., Montreal	Dufresnoy Tp.
Quebec Gold Rocks Exploration Ltd.	477 St. Francois-Xavier, Montreal	Launay
Quebec Smelting and Refining Corp.	215 St. James St. W., Montreal.	Urban Tp.
Quebec Mines Ltd.	320 Bay St., Toronto, Ontario.	Duprat Tp.
Randona Quebec Gold Mines Ltd.	330 Bay St., Toronto, Ontario.	Abitibi Co.
Royvan Gold Fields Inc.	215 St. James St. W., Montreal.	
Roybar Chibougamaui Mines Ltd.	67 Yonge St., Toronto, Ontario	Chibougamaui Tp.
Saguenay Mining & Smelting Co. Ltd.	De Salles, Charlevoix.	De Salles Tp.
Scott Chibougamaui Mines Ltd.	215 St. James St. W., Montreal.	Scott and McKenzie Tps.
Seguin Consolidated Mines Ltd.	c/o Arthur Seguin, Rouyn.	Bachelor Lake
St. Francis Mining Co. Ltd.	603 Royal Bank Building, Toronto, Ontario.	Vassan
Senatar-Rouyn Ltd.	Box 780, Noranda.	Rouyn Tp.
Sigma Mines (Quebec) Ltd.	Bourlamaque.	Bourlamaque Tp.
Siscoe Gold Mines Ltd.	907 Dominion Square Building, Montreal	Dubuisson Tp.
Sladen-Malarctic Mines Ltd.	56 Sparks St., Ottawa, Ontario.	Malarctic Tp.
South Dufault Mines Ltd.	302 Bay St., Toronto, Ontario.	Rouyn Tp.
Stadacona Mines (1944) Ltd.	377 St. James St. W., Montreal.	Dubuisson Tp.
Sullivan Consolidated Mines Ltd.	1604 Aldred Building, Montreal.	Sennerville Tp.
Titanic Mine Holdings Ltd.	215 St. James St. W., Montreal.	Lesueur Tp.
U. K. Explorator Co. Ltd.	15 King St. W., Toronto, Ontario	Malarctic Tp.
Vinnyr Malarctic Mines Ltd.	Box 1285, Rouyn.	Beauchastel Tp.
Wakeko Mines Ltd.	67 Yonge St., Toronto, Ontario	Benoit Tp.
Wadassa Gold Mines Ltd.	67 Govt. Road W., Kirkland Lake, Ontario.	Cadillac Tp.
West Malarctic Mines Ltd.	7000 Jeanne-Mance St., Montreal.	Vassan Tp.
Western Quebec Mines Co. Ltd.	465 St. John St., Montreal.	
ONTARIO:		
<i>Porcupine District</i>		
Aunor Gold Mines Ltd.	1600 Royal Bank Building, Toronto	Timmins
Bobs Lake Gold Mines Ltd.	85 Richmond St. W., Toronto	Whitney Tp.
Bonetall Gold Mines Ltd.	1705 Sterling Tower Building, 372 Bay St., Toronto	Pamour
Broulain Porcupine Mines Ltd.	1705 Sterling Tower Building, 372 Bay St., Toronto	Whitney Tp.
Buffalo Ankerite Gold Mines Ltd.	Box 533, South Porcupine.	Deloro Tp.
Central Porcupine Mines Ltd.	25 King St. W., Toronto.	Porcupine
Clavos Porcupine Mines Ltd.	85 Richmond St. W., Toronto	German Tp.
Coniaurum Mines Ltd.	25 King St. W., Toronto.	Tisdale Tp.
Deinite Mines Ltd.	Box 590, Timmins.	Deloro Tp.
Dome Mines Ltd.	South Porcupine.	Tisdale Tp.
Goldhawk Porcupine Mines Ltd.	320 Bay St., Toronto	Whitney Tp.
Hallnor Mines Ltd.	1600 Royal Bank Building, Toronto	Hislop Tp.
Hollinger Consolidated Gold Mines Ltd.	Timmins.	Pamour Tp.
Hoyle Mining Co. Ltd.	Box 997, Haileybury.	Cochrane District
Hugh-Pan Porcupine Mines Ltd.	719 Yonge St., Toronto	Hislop Tp.
Kelore Mines Ltd.	330 Bay St., Toronto	Hislop Tp.
Marchaud Mines Ltd.	Box 999, Haileybury.	Michael Tp.
McIntyre Porcupine Mines Ltd.	Schumacher.	Schumacher
Midcamp Mines Ltd.	1600 Royal Bank Building, Toronto	Tisdale Tp.
Naybob (1945) Gold Mines Ltd.	85 Richmond St. W., Toronto	Timmins
Pamour Porcupine Mines Ltd.	Pamour.	Whitney Tp.
Paymaster Consolidated Mines Ltd.	Box 508, South Porcupine.	Deloro and Tisdale Tps.
Porcupine Penninsular Gold Mines Ltd.	Star Building, 80 King St. W., Toronto.	Nighthawk Lake
Porcupine Reef Gold Mines Ltd.	1705 Sterling Tower, 372 Bay St., Toronto	Pamour
Preston East Dome Mines Ltd.	Box 545, South Porcupine.	South Porcupine
Riczone Mines Ltd.	55 York St., Toronto.	Rickard Tp.
<i>Kirkland Lake District</i>		
Bidgood Kirkland Gold Mines Ltd.	357 Bay St., Toronto	Lebel Tp.
Kirkland Gold Gate Mines Ltd.	36 Toronto St., Toronto	Swastika
Kirkland Lake Gold Mining Co. Ltd.	1314 Metropolitan Building, Toronto	Teck Tp.
Lake Shore Mines Ltd.	85 Richmond St. W., Toronto	Kirkland Lake
Macassa Mines Ltd.	171 Yonge St., Toronto	Kirkland Lake
Northland Mines (1940) Ltd.	1101 Federal Building, Toronto	Gauthier Tp.
Queenston Gold Mines Ltd.	Box 670, Kirkland Lake	Teck Tp.
Sylvanite Gold Mines Ltd.	14 Finkle St., Woodstock	Kirkland Lake
Teck-Hughes Gold Mines Ltd., The	1809 Royal Bank Building, Toronto	Kirkland Lake
Toburn Gold Mines Ltd.	101 Federal Building, Toronto	Gauthier Tp.
Upper Canada Mines Ltd.	Fort Erie	Kirkland Lake
Wright-Hargreaves Mines Ltd.		
<i>Larder Lake District</i>		
Amalgamated Larder Mines Ltd.	80 King St. W., Toronto	Larder Lake
Amistice Gold Mines Ltd.	100 Adelaide St. W., Toronto.	McGarry Tp.
Cadbury Larder Mines Ltd.	171 Yonge St., Toronto	McElroy Tp.
Chesterville Mines Ltd.	330 Bay St., Toronto	McGarry Tp.
Kerr-Addison Gold Mines Ltd.	80 King St. W., Toronto	McGarry Tp.
Omega Gold Mines Ltd.	80 King St. W., Toronto	McVittie Tp.
Winchester Larder Mines Ltd.	1101 Federal Bldg., 85 Richmond St. W., Toronto	Larder Lake

The Auriferous Quartz Mining Industry — Continued

Name	Head Office Address	Location
ONTARIO — Continued:		
<i>Matatchewan District</i>		
Matatchewan Consolidated Mines Ltd.	25 King St. W., Toronto	Powell Tp.
Hollinger Consolidated Gold Mines Ltd.	Timmins	Powell Tp.
<i>Sudbury District</i>		
Dulama Gold Mines Ltd.	330 Bay St., Toronto	Leeson Tp.
Jerome Gold Mines Ltd.	350 Bay St., Toronto	Osway Tp.
Joburke Gold Mines Ltd.	357 Bay St., Toronto	Joburke
Orofino Mines Ltd.	67 Yonge St., Toronto	Horwood Tp.
Renable Mines Ltd.	85 Richmond St. W., Toronto	Sudbury
Stover Gold Mines Ltd.	5 Elgin St. S., Sudbury	Missanabie Area
<i>Thunder Bay District</i>		
Andowan Mines Ltd.	Kashabowie	Kashabowie
Gold Island Porcupine Mines Ltd.	159 Bay St., Toronto	Garrison Tp.
Hard Rock Gold Mines Ltd.	357 Bay St., Toronto	Geraldton
Lake Superior Mining Corp. Ltd.	Geraldton	Ashmore Tp.
Leitch Gold Mines Ltd.	330 Bay St., Toronto	Summers Tp.
Little Long Lac Gold Mines Ltd.	Beardmore	Errington Tp.
MacLeod-Cockshutt Gold Mines Ltd.	337 Bay St., Toronto	Geraldton
Magnet Consolidated Mines Ltd.	515 Jarvis St., Toronto	Geraldton
Mosher Long Lac Gold Mines Ltd.	67 Yonge St., Toronto	Long Lac
Talmora Long Lac Gold Mines Ltd.	217 Bay St., Toronto	Errington Tp.
Undersill Gold Mining Company Ltd.	25 King St. W., Toronto	Beardmore
<i>Kenora District</i>		
Kerwall Gold Mines Ltd.	26-28 Adelaide St. W., Toronto	Ball Tp.
<i>Patricia District</i>		
Advance Red Lake Gold Mines Ltd.	347 Bay St., Toronto	Red Lake
Berens River Mines Ltd.	Favourable Lake	Favourable Lake
Campbell Red Lake Mines Ltd.	Balmertown	Balmer Tp.
Central Patricia Gold Mines Ltd.	801 Dominion Bank Building, Toronto	Central Patricia
Cochenour Willans Gold Mines Ltd.	67 Yonge St., Toronto	Dome Tp.
Clinger Gold Mines Ltd.	85 Richmond St. W., Toronto	Echo Tp.
Conwest Exploration Co. Ltd.	171 Yonge St., Toronto	various
Crowshore Patricia Gold Mines Ltd.	40 Adelaide St. W., Toronto	Patricia
Detta Red Lake Mines Ltd.	40 Adelaide St. W., Toronto	Balmer Tp.
Dickenson Red Lake Mines Ltd.	25 King St. W., Toronto	Balmer Tp.
Hasaga Gold Mines Ltd.	80 King St. W., Toronto	Dome Tp.
Lingman Lake Gold Mines Ltd.	217 Bay St., Toronto	Lingman Lake
Lunward Gold Mines Ltd.	67 Yonge St., Toronto	Echo Tp.
Madsen Red Lake Gold Mines Ltd.	357 Bay St., Toronto	Heyson Tp.
Marcus Gold Mines Ltd.	19 Richmond St. W., Toronto	Dome Tp.
McKenzie Red Lake Gold Mines Ltd.	402 Premier Trust Building, Toronto	Dome Tp.
McMarnac Red Lake Gold Mines Ltd.	357 Bay St., Toronto	Dome Tp.
Miles (Red Lake) Mines Ltd.	85 Richmond St. W., Toronto	Ball Tp.
Norpick Gold Mines Ltd.	Pickle Crow	Patricia
Pickle Crow Gold Mines Ltd.	371 Bay St., Toronto	Pickle Crow
Slate Bay Gold Mines Ltd.	25 King St. W., Toronto	McDonough Tp.
Staratt-Olsen Gold Mines Ltd.	24 King St. W., Toronto	Balrd Tp.
New Jason Mines Ltd.		Casummit Lake
MANITOBA:		
Central Manitoba Mines Ltd.	274 Fort St., Winnipeg	Rice Lake
Consolidated Mining & Smelting Co. of Canada Ltd.	Trail, British Columbia	Channing
Herb Lake Mining & Exploration Ltd.	23 Scott St., Toronto, Ontario	Herb Lake
Howe Sound Exploration Co. Ltd.	Snow Lake	Snow Lake
Jeep Gold Mine Ltd.	237 Curry Building, Winnipeg	Bissett
Northern Canada Mines Ltd.	44 Victoria St., Toronto, Ontario	Snow Lake
Ogama-Rockland Gold Mines Ltd.	1501 Star Building, 80 King St. W., Toronto, Ontario	Long Lake
Roxy Gold Mines Ltd.	395 Main St., Winnipeg	Rice Lake
San Antonio Gold Mines Ltd.	237 Curry Building, Winnipeg	Bissett
Sno-Squall Mines Ltd.	Box 779, Flin Flon	Herb Lake
SASKATCHEWAN:		
Nicholson Mines, Ltd.	25 King St. W., Toronto, Ontario	Goldfields
BRITISH COLUMBIA:		
Alpine Gold Ltd.	Box 191, Nelson	Nelson
Bralorne Mines Ltd.	555 Burrard St., Vancouver	Bralorne
Consolidated Mining & Smelting Co. of Canada Ltd.	Trail	Omineca
Canyon Cariboo Gold Mines Ltd.	799 W. Pender St., Vancouver	Cariboo
Cariboo Gold Quartz Mining Co. Ltd.	1007 Royal Bank Building, 675 W. Hastings St., Vancouver	Cariboo
Dentonia Mines Ltd.	509 Richards St., Vancouver	Greenwood
Esperanza Mines Ltd.	624 Columbia St., New Westminster	Cassiar
Halforth Mines Ltd.	67 Yonge St., Toronto, Ontario	Portland Canal
Hedley Monarch Gold Mines Ltd.	602 Rogers Building, Vancouver	Osoyoos
Hedley Mascot Gold Mines Ltd.	908 Royal Bank Building, Vancouver	Osoyoos
Island Mountain Mines Co. Ltd.	Wells	Cariboo
Kelowna Exploration Co. Ltd.	Hedley	Osoyoos
Kenville Gold Mines Ltd.	603 Royal Bank Building, Toronto, Ontario	Nelson
Kootenay Belle Leasers	Sheep Creek	Sheep Creek
Kootenay Central Mines Ltd.	Box 2020, Rossland	Rossland
Morris Summit Gold Mines Ltd.	510 Stock Exchange Building, Vancouver	Salmon River
Pioneer Gold Mines of B.C. Ltd.	711 Yorkshire Building, Vancouver	Lillooet
Polaris-Taku Mining Co. Ltd.	Tulsequah	Atlin
Privateer Mine Ltd.	602 Stock Exchange Building, Vancouver	Zeballos
Sheep Creek Gold Mines Ltd.	616 Stock Exchange Building, Vancouver	Nelson

The Auriferous Quartz Mining Industry — Concluded

Name	Head Office Address	Location
NORTHWEST TERRITORIES:		
Akaitcho Yellowknife Gold Mines Ltd.	25 King St. W., Toronto, Ontario	Yellowknife
Consolidated Mining & Smelting Company of Canada Ltd.	Trail, British Columbia.....	Yellowknife
Crestaurum Mines Ltd.	25 King St. W., Toronto, Ontario	Yellowknife
Discovery Yellowknife Mines Ltd.	171 Yonge St., Toronto, Ontario.....	Yellowknife
Giant Yellowknife Gold Mines Ltd.	25 King St. W., Toronto, Ontario	Yellowknife
Probisher Ltd.	25 King St. W., Toronto, Ontario	Yellowknife
Negus Mines Ltd.	1006 Concourse Building, Toronto, Ontario	Yellowknife
Newnorth Gold Mines Ltd.	25 King St., Toronto, Ontario	Courageous Lake
Ranney Gold Mines Ltd.	320 Bay St., Toronto, Ontario.....	Yellowknife
Thompson-Lundmark Gold Mines Ltd.	320 Bay St., Toronto, Ontario.....	Yellowknife

The Alluvial Gold Industry

Name	Head Office Address	Location
BRITISH COLUMBIA:		
American Gold Fields	320 Platt Building, Portland, Oregon	Cariboo
Andersen, M.A.	Wells.....	Cariboo
Atkinson Dredging Co. Ltd.	Princeton.....	Similkameen
Atlin Ventures Ltd.	2836 E. 16th Ave., Vancouver	Atlin
Boulder Creek Partnership	Atlin.....	Atlin
Boyd, John	410 Maclean Block, Calgary, Alberta.....	Fort Steele
Biggs, Leroy.....	Stanley.....	Cariboo
Bride, Maurice.....	Spruce Creek, Atlin.....	Atlin
Brister, J.V., Co.	Atlin.....	Atlin
Chimney Creek-Fraser Placer Mines Ltd.	45 Richmond St. W., Toronto, Ontario.....	Quesnel
Fallow Bros Ltd.	Vernon.....	Vernon
Fook Chung	Wells.....	Cariboo
Falconer, D.K.	Spruce Creek, Atlin.....	Atlin
Freeman, F.W., and Hind, J.	Van Winkle.....	Cariboo
Fry, Thomas.....	Quesnel and Rochon Creek	Cariboo
Gunn, J.J.	Wells.....	Cariboo
Hall, Ralph.....	Mahson Creek	Manson Creek
Hugh, R., and J.A. Reddick	Princeton.....	Similkameen
Holm, A., and T.M. Petersen	Barkerville.....	Cariboo
Ivanic, Steve & Partners.....	Atlin.....	Spruce Creek
Lowhee Mining Co. Ltd.	605 Tacoma Building, Tacoma, Washington, U.S.A.	Cariboo
Geometal Mines Ltd.	612 Federal Building, Toronto.....	Quesnel
Lincoln Gold Placers Ltd.	Manson Creek	Omineca
Moccasin Mines Ltd.	5261 Stockton Blvd., Sacramento, California, U.S.A.	McDame Creek
Noland, John W.	Atlin.....	Spruce Creek
Ppich, Tom.....	Atlin.....	Atlin
Piccolo Bros.	5261 Stockton Blvd., Sacramento, California, U.S.A.	Cariboo
Summit Mines, Ltd.	Atlin.....	Atlin
Swanson & Watt	Box 845, Quesnel	Cariboo
Swift River Dredging Co. Ltd.	351 California St., San Francisco, California, U.S.A.	Omineca
Van Deijne, F.C.		
YUKON:		
Clear Creek Placers Ltd.	Dawson.....	Clear Creek
Kluane Dredging Co. Ltd.	Whitehorse.....	Burwash Creek
Yukon Explorations Ltd.	675 West Hastings St., Vancouver, British Columbia	Big Gold Creek
Yukon Consolidated Gold Corp. Ltd.	1919 Marine Building, Vancouver, British Columbia	various

The Copper-Gold-Silver Mining Industry

Name	Head Office Address	Location
QUEBEC:		
Continental Copper Mines Ltd.	67 Yonge St., Toronto, Ontario.....	Dufresnoy Tp.
Cusau Mines Ltd.	477 St. Francois Xavier St., Montreal	LaSarre Tp.
East Sullivan Mines Ltd.	1004 Aldred Building, Montreal	Bourlamaque Tp.
Gaspé Copper Mines Ltd.	Noranda.....	Holland Tp.
Gan Copper Mines Ltd.	c/o H.G. Donley, 38 King St. W., Toronto, Ontario	Beauchastel Tp.
Inco Mines Ltd.	355 St. James St., Montreal	Dufresnoy Tp.
Lake Dufault Mines Ltd.	Duparquet.....	Dufresnoy Tp.
Noranda Exploration Co. Ltd.	Noranda.....	Holland Tp.
Noranda Mines Ltd.	1600 Royal Bank Building, Toronto, Ontario	Noranda
Norbec Copper Mines Ltd.	25 King St. W., Toronto, Ontario.....	Dufresnoy Tp.
Normetal Mining Corp. Ltd.	350 Bay St., Toronto, Ontario	Desmeloiges Tp.
Parmout Mining Corp. Ltd.	5225 Avenue de Gaspé, Montreal	Dalquier
Quebec Manitou Mines Ltd.	78 Sparks St., Ottawa, Ontario	Abitibi
Rainville Copper Mines Ltd.	25 King St. W., Toronto, Ontario	Louvicourt Tp.
Richard Copper Corp.	Box 898, Haileybury, Ontario.....	Destor Tp.
Touton Mining & Exploration Co.	c/o Joseph Hurtbise, 500 Place d'Ames, Montreal	Fabre Tp.
Queumont Mining Corp. Ltd.	350 Bay St., Toronto, Ontario	Rouyn Tp.
Waite Amulet Mines Ltd.	Noranda.....	Dufresnoy Tp.
Quebec Smelters Ltd.	Noranda.....	Gaspé

The Copper-Gold-Silver Mining Industry — Concluded

Name	Head Office Address	Location
ONTARIO		
Bi-Ore Mines Ltd.	199 Bay St., Toronto	Iron Bridge
Ryan Lake Mines Ltd.	Drawer 102, Matachewan	Powell Tp.
Trethewey Ossian Copper Mines Ltd.	23A Earl St., Kirkland Lake	Boston Creek
MANITOBA		
Cuprus Mines Ltd.	500 Royal Bank Building, Winnipeg	Flin Flon
Hudson Bay Mining & Smelting Co. Ltd.	500 Royal Bank Building, Winnipeg	Flin Flon
Sheritt-Gordon Mines Ltd.	25 King St. W., Toronto, Ontario	Sheridon
Callinan Flin Flon Mines Ltd.	66 King St. W., Toronto, Ontario	Flin Flon
Dickstone Copper Mines Ltd.	395 Main St., Winnipeg	Morton Lake
SASKATCHEWAN		
Hudson Bay Mining & Smelting Co. Ltd.	500 Royal Bank Building, Winnipeg, Manitoba	Flin Flon
BRITISH COLUMBIA		
Britannia Mining & Smelting Co. Ltd.	Britannia Beach	Britannia Beach
Granby Consolidated Mining, Smelting and Power Co. Ltd.	675 West Hastings St., Vancouver	Similkameen
Guichon Mine Ltd.	108 Drummond Bldg., Montreal	Yale
Quatsino Copper Gold Mines Ltd.	572 Howe St., Vancouver	Greenwood
Vananda Mines (1948) Ltd.	616 Stock Exchange Building, Vancouver	Vananda
Velvet Mine	1730 Vance Building, Seattle, Washington, U.S.A.	Trail Creek

The Silver-Lead-Zinc Mining Industry

Name	Head Office Address	Location
QUEBEC:		
Anacon Lead Mines Ltd.	330 Bay St., Toronto, Ontario	Montaubon les
Barmont Mines Ltd.	276 St. James St. West, Montreal	Abitibi
Candego Mines Ltd. ¹	1085 Beaver Hall Hill, Montreal	Gaspé
Federal Zinc and Lead Co. Ltd. ¹	708 Drummond Bldg., Montreal	Lemieux Tp.
Golden Manitou Mines Ltd.	30 Bay St., Toronto, Ontario	Bourlamaque Tp.
Grand Calumet Mining Co. Ltd.	360 St. James St. West, Montreal	Calumet Island
Gulf Lead Mines Ltd. ¹	330 Bay St., Toronto, Ontario	Hudson Bay
Lyall and Beidelman ¹	1117 St. Catherine St. W., Montreal	Gaspé
MacDonald Mines Ltd. ¹	1085 Beaver Hall Hill, Montreal	Dufresnoy Tp.
Mistassini Explorations Ltd. ¹	184 Bay St., Toronto, Ontario	Mistassini
New Norzone Mines Ltd. ¹	67 Yonge St., Toronto, Ontario	Montbeillard Tp.
New Calumet Mines Ltd.	25 King St. West, Toronto	Calumet
Shearzona Mines Ltd. ¹	330 Bay St., Toronto	Montbeillard Tp.
Tetreault Mines Ltd. ¹	650 Ave. Stuart, Outremont	Montaubon
Val D'Or Consolidated Mines Ltd. ¹	111 Mountain Hill, Quebec, Quebec	Dollard Tp.
Villa Lead Mining Corp. Ltd. ¹	45 Richmond St. W., Toronto	Guigues Tp.
Zullo Mineral Exploration ¹	Ville Marie, Quebec	Temiscamingue
ONTARIO		
Kingdon Mining Co. Ltd.	128 Slater St., Ottawa	Galetta
Ruckette Gold Mines Ltd.	5204 rue St. André, Montreal, Quebec	Long Lake
Lennox Mines Co. Ltd.	John St., Nanawane	Enterprise
Santon Lead Mines Ltd.	501-67 Yonge St., Toronto	Fitzroy Tp.
BRITISH COLUMBIA		
Ainsmore Consolidated Mines Ltd.	Ainsworth	Ainsworth
Alamo Silver-Lead Mining Co. Ltd. ¹	11 King St. West, Toronto, Ontario	Slocan
Centre Star	Ymir	Nelson
Base Metals Mining Corp. Ltd.	403 Temple Bldg., Toronto, Ontario	Field
B.C. Slocan-Rambler Mines (1947) Ltd.	New Denver	Slocan
Big Four Silver Mines Ltd. ¹	317 Royal Bank Bldg., Vancouver	Stewart
Bruno Stema	Ymir	Nelson
Consolidated Mining & Smelting Co. of Canada Ltd.	Trail	Kimberley
Cronin, Bahine Mines Ltd. ¹	85 Richmond St. W., Toronto, Ontario	Omineca
Emilson, Edward	Balfour	Ainsworth
Garnett, C.J.	Retallack	Greenwood
Halifax Mine	Box 1312, Rossland	Greenwood
Highland Bell Ltd.	844 West Hastings St., Vancouver	Slocan
Kennedy, R.J.	South Slocan	Greenwood
Highland Silver Mines Ltd. ¹	Sanca	Nelson
Lakeview Mine	Kaslo	Ainsworth
Lind, Chas.	Ainsworth	Ainsworth
Hawes, T. & J.	916 Stock Exchange Bldg., Vancouver	Retallack
Kootenay Belle Gold Mines Ltd.	Salmo	Nelson
International Lead & Iron Mine	Slocan City	Slocan
Klemen & McDonnell	1819 Acadia Rd., Vancouver	Trail
Lowett, E.H., Ltd.	Box 629, Greenwood	Similkameen
McArthur, W.E. and Son	Slocan City	Slocan
McDonnell, Hill & Webster	Rlewett	Nelson
McKew, H.A.	Ymir	Retallack
Meyer, Edmond	809 Yorkshire Bldg., Vancouver	
Nesbitt & Crosby		

1. Active but not producing.

The Silver-Lead-Zinc Mining Industry — Concluded

Name	Head Office Address	Location
BRITISH COLUMBIA — Concluded		
Nicholson, Mark.....	Moyie.....	Moyie
Petersen, E.H.....	Sandon.....	Slocan
Reeves MacDonald Mines Ltd.....	616 Stock Exchange Bldg., Vancouver.....	Salmo
Robitcaud, Louis.....	Stewart.....	Portland Canal
Santiago Mines Ltd.....	423 Hamilton St., Vancouver.....	Slocan
Sheep Creek Gold Mines Ltd.....	616 Stock Exchange Bldg., Vancouver.....	Zincton and Invermere
Silbak Premier Mines Ltd.....	911 Birks Building, Vancouver.....	Premier
Silver Bounty Mines Ltd.....	567 Hornley St., Vancouver.....	Beaverdell
Silver Giant Mines Ltd. ¹	707 Credit Foncier Bldg., Vancouver.....	Spillimacheen
Silver Hill Mines Ltd. ¹	920 Stock Exchange, Vancouver.....	Ainsworth
Silver Ridge Mining Co. Ltd.....	Sandon.....	Sandon
Silver Standard Mines Ltd.....	602 W. Hastings St., Vancouver.....	Omineca
Spokane Mine.....	Bayonne.....	Nelson
Torbrit Silver Mines Ltd.....	350 Bay St., Toronto, Ontario.....	Alice Arm
Utica Mines (1937) Ltd.....	616 Stock Exchange Bldg., Vancouver.....	Ainsworth
Van Roi Mines (1947) Ltd.....	Silverton.....	Slocan
Viola Mac Mines (B.C.) Ltd.....	67 Yonge St., Toronto, Ontario.....	Slocan
Webster, David.....	609-2nd St. Nelson.....	Slocan
Western Exploration Co. Ltd.....	Silverton.....	Slocan
Yale Lead & Zinc Mines Ltd. ¹	330 Bay St., Toronto, Ontario.....	Ainsworth
YUKON :		
Cream Claims.....	Mayo Landing.....	Mayo
Mayo Mines Ltd.....	1600 Royal Bank Bldg., Toronto, Ontario.....	Mayo
Nicol & Breaft.....	Mayo Landing.....	Mayo
Settlemier & Bermingham.....	Galena Hill.....	Mayo
United Keno Hill Mines Ltd.....	85 Richmond St. W., Toronto, Ontario.....	Mayo

1. Active but not producing.

The Silver-Cobalt Mining Industry

Name	Head Office Address	Location
ONTARIO :		
Aussic Mining & Reduction Co. Ltd.....	Box 643, Cobalt.....	Coleman Tp.
Casey Operation, The.....	Box 450, Cobalt.....	Casey Tp.
Cross Lake Lease (O'Brien).....	Box 390, Cobalt.....	Coleman Tp.
Kerr Lake Lease.....	Box 569, Cobalt.....	Coleman Tp.
Mayfair Mines Ltd. ¹	156 Yonge St., Toronto.....	Coleman Tp.
Nipissing Mining Co. Ltd., The ¹	302 Bay St., Toronto.....	Cobalt
Silanco Mining & Refining Co. Ltd.....	7 Prospect Ave., Cobalt.....	Cobalt
Silco Mines Ltd. ¹	67 Yonge St., Toronto.....	Gillies
Silver Arrow Mines Ltd.....	85 Richmond St. W., Toronto.....	S. Lorrain
Silver Miller Mines Ltd.....	66 King St. W., Toronto.....	Cobalt
Siscoe Metals Ltd.....	907 Dominion Square Building, Montreal, Quebec.....	Haultain Tp.
Windsor Cobalt Silvers Ltd.....	9 Toronto St., Toronto.....	Bucke Tp.
Silver Chest Mines Ltd.....	Charles and Victoria Sts., Kitchener, Ontario.....	Gowganda
Mensilvo Mines Ltd.....	85 Richmond St. W., Toronto.....	Coleman Tp.
New LaRose Mining & Smelting Ltd.....	112 Yonge St., Toronto.....	Coleman Tp.

1. Active but no shipments made.

Note: In addition to the names listed, there were some small shippers.

The Nickel-Copper Mining, Smelting and Refining Industry

Name of Firm	Head Office Address	Location
ONTARIO :		
Falconbridge Nickel Mines, Ltd. ¹	21 Dundas Square, Toronto.....	Falconbridge Tp.
International Nickel Company of Canada Limited ¹	Copper Cliff.....	Mines: Tps. of Levack, Sudler, McKim and Gerson Smelters: Copper Cliff and Coniston Nickel refinery: Port Colborne Copper refinery: Copper Cliff

1. Active but no shipments made.

The Nickel-Copper Mining, Smelting and Refining Industry — Concluded

Name of Firm	Head Office Address	Location
ONTARIO — Concluded:		
Nickel Offsets Ltd.	Room 1701, 372 Bay St., Toronto	Foy Tp.
Trebor Mines Ltd.	350 Bay St., Toronto	Strathy Tp.
MANITOBA:		
Baker Lake Explorations Ltd.	45 Richmond St. W., Toronto	Eldon Lake
Barrington Lake Copper Mines.	1608 Star Bldg., Toronto	Hughes River
Cheslirk Mines Ltd.	301, 100 Adelaide St. W., Toronto	Lynn Lake
Denison Nickel Mines Ltd.	62 Richmond St. W., Toronto	Lynn Lake
Falconbridge Nickel Mines Ltd.	21 Dundas Square, Toronto	Lynn Lake
Granville Lake Nickel Mines Ltd.	209, 330 Bay St., Toronto	Berge Lake
Hoodoo Lake Mines Ltd.	504, 357 Bay St., Toronto	Granville Lake
International Nickel Company of Canada, Limited.	Copper Cliff, Ontario	Granville Lake
Lynbar Mines Ltd.	1006 Concourse Bldg., Toronto	Lynn Lake
Lynwallin Nickel Copper Ltd.	1001 Federal Bldg., Toronto	Granville Lake
Nickel Lake Mines Ltd.	395 Main St., Winnipeg	Barrington Lake
Nicoba Mines Ltd.	1001 Federal Bldg., Toronto	Black Trout Lake
Norancon Exploration Ltd.	1600 Royal Bank Bldg., Toronto	Lynn Lake
Noranda Mines Ltd.	1600 Royal Bank Bldg., Toronto	Lynn Lake
Sheritt Gordon Mines Ltd.	25 King St. W., Toronto	Granville Lake
Transcontinental Resources Ltd.	3100, 25 King St. W., Toronto	Granville Lake

The Miscellaneous Metal Mining Industry

Name of firm and product	Head office address	Location of mine or plant
ALUMINUM:		
Aluminum Company of Canada Limited.	1700 Sun Life Building, Montreal, Quebec	Arvida, Quebec Shawinigan Falls, Quebec, La Tuque, Quebec, Ile Maligne, Quebec, Beauharnois, Quebec
ANTIMONY:		
Consolidated Mining & Smelting Company of Canada Ltd.	215 St. James St., Montreal, Quebec	Trail, British Columbia
BARIUM:		
Dominion Magnesium Ltd.	Haley, Ontario	Haley, Ontario
BERYL:		
Canadian Beryllium Mines & Alloys Ltd. ¹	100 Adelaide St. W., Toronto, Ontario	Renfrew County, Ontario
BISMUTH:		
Deloro Smelting & Refining Co. Ltd.	900 Victoria Building, Ottawa, Ontario	Deloro, Ontario
Consolidated Mining & Smelting Company of Canada Ltd.	215 St. James St., Montreal, Quebec	Trail, British Columbia
Molybdenite Corp. of Canada Ltd.	59 St. James St. W., Montreal, Quebec	La Corne Tp., Quebec
CADMIUM:		
Consolidated Mining & Smelting Company of Canada Ltd.	215 St. James St., Montreal, Quebec	Trail, British Columbia
Hudson Bay Mining & Smelting Co. Ltd.	500 Royal Bank Building, Winnipeg, Manitoba	Flin Flon, Manitoba
Western Exploration.	Silverton, British Columbia	Kaslo, British Columbia
CHROMITE:		
Chrome Association ¹	342 Notre Dame St., Black Lake, Quebec	Black Lake, Quebec
Chromite Ltd. ¹	404 Notre Dame St. W., Montreal, Quebec	Cleveland Tp., Quebec
Paré, Orl.	Black Lake, Quebec	Coleraine Tp., Quebec
IRON ORE:		
Babcock Corp. Ltd. ¹	Kazabazua, Quebec	Northfield Tp., Quebec
Kazabazua Mining Corp. Ltd. ¹	Kazabazua, Quebec	Heney Lake, Quebec
Fenimore Mines Ltd. ¹	123 St. James St. W., Montreal, Quebec	New Quebec
Fort Chimo Mines Ltd. ¹	25 King St. W., Toronto, Ontario	New Quebec
Great Mountain Iron Corp. ¹	516 Canada Cement Building, Montreal, Quebec	Connelly Lake Ungava

1. Active but not producing.

The Miscellaneous Metal Mining Industry — Continued

Name of firm and product	Head office address	Location of mine or plant
Iron Ore — Concluded:		
Hollinger North Shore Exploration Co. Ltd ¹	721 Royal Bank Building, Montreal, Quebec....	New Quebec
Mistassini Explorations Ltd ¹	184 Bay St., Toronto, Ontario.....	Lake Albanel, Quebec
Norancon Exploration (Quebec) Ltd ¹	Noranda, Quebec.....	Ungava district, Quebec
Quebec Labrador Development Co. Ltd ¹	100 Adelaide St. W., Toronto, Ontario.....	New Quebec
United Dominion Mining Co. Ltd ¹	465 St. John St., Montreal, Quebec.....	Saguenay Co., Quebec
Algoma Ore Properties Ltd.....	Cornwall Building, Sault Ste. Marie, Ontario....	Algoma district, Ontario
Michipicoten Iron Mines Ltd.....	25 King St. W., Toronto, Ontario.....	Algoma district, Ontario
Rebar Gold Mines Ltd ¹	9 Adelaide St. E., Toronto, Ontario.....	Atikokan, Ontario
Steep Rock Iron Mines Ltd.....	25 King St. W., Toronto, Ontario.....	Rainy River district, Ontario
Coast Iron Co. Ltd.....	475 Howe St., Vancouver, British Columbia....	Quinsam Lake
INDIUM:		
Consolidated Mining & Smelting Company of Canada Ltd ¹	215 St. James St., Montreal, Quebec.....	Trail, British Columbia
LITHIUM:		
Canadian Lithium Co. Ltd ¹	57 Queen St., Toronto, Ontario.....	Abitibi Co., Quebec
La Corne Lithium Mines Ltd ¹	320 Bay St., Toronto, Ontario.....	La Corne, Quebec
MANGANESE:		
Quebec Manganese Mines Ltd.....	231 St. James St. W., Montreal, Quebec.....	Magdalen Islands, Quebec
MAGNESIUM:		
Dominion Magnesium Ltd.....	67 Yonge St., Toronto, Ontario.....	Haley, Ontario
Aluminum Co. of Canada Ltd.....	1700 Sun Life Building, Montreal, Quebec.....	Arvida, Quebec
MERCURY:		
Bralorne Mines Ltd ¹	555 Burrard St., Vancouver, British Columbia..	Omineca district, British Columbia
Consolidated Mining & Smelting Company of Canada Ltd ¹	215 St. James St., Montreal, Quebec.....	Pinchi Lake, British Columbia
MOLYBDENITE:		
Molybdenite Corp. of Canada Ltd.....	59 St. James St. W., Montreal, Quebec.....	La Corne, Quebec
Quoyon Molybdenite Co. Ltd ¹	Quoyon, Quebec.....	Quoyon, Quebec
SELENIUM-TELLURIUM:		
International Nickel Co. of Canada Ltd.....	Copper Cliff, Ontario.....	Copper Cliff, Ontario
Canadian Copper Refiners Ltd.....	1600 Royal Bank Building, Toronto, Ontario....	Montreal East, Quebec
TANTALUM-COLUMBITE:		
Tantalum Refining & Mining Corporation of America ¹	11 King St. W., Toronto, Ontario.....	Ross Lake, Northwest Territories
THALLIUM:		
Hudson Bay Mining & Smelting Co. Ltd ¹	500 Royal Bank Building, Winnipeg, Manitoba..	Flin Flon, Manitoba
TIN:		
Consolidated Mining & Smelting Company of Canada Ltd.....	215 St. James St., Montreal, Quebec.....	Trail, British Columbia
Mountain Crest Mines Ltd ¹	1445 MacKay St., Montreal, Quebec.....	Charlevoix, Quebec
TITANIUM ORE:		
Baie St. Paul Titanic Iron Ore Co. ¹	Baie St. Paul, Quebec.....	St. Urbain, Quebec
Coulombe, J.....	71 Ave. Royal Monument, Quebec, Quebec....	St. Urbain, Quebec
Kennco Explorations, Ltd ¹	244 Bay St., Toronto, Ontario.....	Allard Lake, Quebec
Quebec Iron and Titanium Corp.....	1522 Sherbrooke St. W., Montreal, Quebec....	Lac Tio, Quebec
TUNGSTEN CONCENTRATES:		
Canadian Exploration Ltd.....	Royal Bank Building, Vancouver, British Columbia	Salmo, British Columbia

The Non-ferrous Smelting and Refining Industry

Name of firm	Head office address	Location of plant
QUEBEC:		
Aluminum Company of Canada Ltd.....	1700 Sun Life Bldg., Montreal.....	Arvida, La Tuque, Shawinigan Falls, Isle Maligne, Beauharnois
Canadian Copper Refiners Ltd.....	1600 Royal Bank Bldg., Toronto, Ontario.....	Montreal East
Noranda Mines Limited.....	1600 Royal Bank Bldg., Toronto, Ontario.....	Noranda
ONTARIO:		
Deloro Smelting & Refining Co. Limited.....	Deloro.....	Deloro
Dominion Magnesium Ltd.....	67 Yonge St., Toronto.....	Haley
Eldorado Mining and Refining.....		Port Hope
Falconbridge Nickel Mines Ltd.....	304 Bay St., Toronto.....	Falconbridge
International Nickel Co. of Canada Limited.....	Copper Cliff.....	Copper Cliff, Coniston, Port Colborne
MANITOBA:		
Hudson Bay Mining and Smelting Co. Limited.....	500 Royal Bank Bldg., Winnipeg.....	Flin Flon
BRITISH COLUMBIA:		
Consolidated Mining & Smelting Co. of Canada Limited.....	Trail.....	Trail

The Coal Mining Industry

Operator	Head office address	Mine location and mine office
NOVA SCOTIA:		
Bras d'Or Coal Co., Ltd.	Bras d'Or.....	Bras d'Or
Dominion Steel and Coal Corp., Ltd.	Sydney	Bras d'Or, ¾ mi. N. of Glance Bay, O'Neil Point Glance Bay, New Aberdeen Glance Bay, Caledonia Glance Bay, Passchendale New Waterford New Waterford New Waterford Glance Bay, New Aberdeen Glance Bay, Caledonia Gardiner Glance Bay, O'Neil Point Sydney Mines, S. side Sydney Mines, W. of Sydney Mines, Cranberry Head Florence Alder Point Inverness Inverness St. Rose Chimney Corner Inverness Inverness Inverness Inverness Inverness Inverness Inverness, Box 223 Kempton Springhill Springhill Springhill Springhill Chignecto Joggins River Hebert River Hebert River Hebert Stellarton, W. side of Stellarton, N. side of Thorburn Thorburn Westville Westville Westville
Indian Cove Coal Co., Ltd.	Sydney Mines, Drawer P.	
Old Sydney Collieries, Ltd.	Sydney Mines.....	
Campbell & Son, A.J.	Inverness.....	
Doucet, S.J.	Inverness.....	
Evans, Dean.....	Chimney Corner.....	
Inverness Coal Mine - Nova Scotia Govt.	Halifax	
Margaree Steamship Co., Ltd.	Inverness (Sydney).....	
MacLellan, John A., and Sons.....	Inverness, Box 223.....	
Colchester Coal Mines, Ltd.	Kempton.....	
Cumberland Ry. & Coal Co.	Springhill.....	
Fife and Taylor, Messrs.	River Hebert.....	
Joggins Coal Co., Ltd.	Amherst, 50 Church St.	
Riverside Coal Co., Ltd.	Halifax, 362 Dutch Village Rd.	
Standard Coal Co., Ltd.	Amherst, 50 Church St.	
Acadia Coal Co., Ltd.	Stellarton.....	
Greenwood Coal Co., Ltd.	New Glasgow.....	
Intercolonial Coal Co., Ltd.	Westville.....	
Wadden, W.H.	Westville, Main St.	
NEW BRUNSWICK:		
Avon Coal Co., Ltd.	Saint John, Box 940	Minto, S. of, near Rothwell
Cole, W.E.	Coal Creek.....	Coal Creek, north of
Crawford, E.S., & Sons.....	Newcastle Creek	Minto, 2½ miles east of
(H. P. Thurrot, <i>Operator</i>)	Minto.....	New Zion, 7 miles SW. of Minto
Flonon, James.....	Minto, R.R. 2.....	Flower Cove, 4 miles S. of Minto
Hoegg, Cecil.....	Coal Creek.....	Coal Creek
King Mining Co.	Minto.....	Minto
McMann, Hugh H.	Newcastle Creek	Newcastle Creek, Block 2, 2½ miles E. of Minto
Miramichi Lumber Co., Ltd.	Minto.....	Minto
(<i>Operator, Lease 171: R.H. Sullivan</i>)	Minto.....	Minto
Mills, Ltd., D.W. & R.A.	W. Saint John	Chipman
Mitchell, H.B. (V. MacFarlane, Op.).....	Minto.....	Newcastle Bridge, S. of C.P. Ry., Minto
Newcastle Coal Co., Ltd.	Minto.....	Rothwell
Welton and Henderson, Ltd.	Minto.....	
Wasson, A.W., Ltd.	Minto.....	
Wisely, W.B. (F.J. and W.J. Horgan, <i>Operators</i>)	Newcastle Bridge.....	Minto, 1½ miles SE. of
Yeamans, Roy		

SASKATCHEWAN

Souris Area

Lessee and operator	Head office	Mine location					Mine office
		Legal Sub.	Sec.	Tp.	Rge.	W. of Mer.	
Adams, F. (Hirsch Bros. and Chamney, <i>Operators</i>).....	Pinto.....	14	35	1	6	2	Pinto
Banks, Harry.....	Bienfait, Box 137.....	16	31	1	6	2	Bienfait
Coats & Kingdon.....	Bienfait.....		19	2	6	2	Bienfait
Eastern Collieries of Bienfait, Ltd.	Estevan, Box 359.....		13	2	7	2	Bienfait
Havanah Collieries, Ltd.	Estevan.....		14, 16, 17, 18	2	7	2	Bienfait
Manitoba & Saskatchewan Coal Co., Ltd.	Winnipeg, 503 Avenue Bldg.		10	2	6	2	Bienfait
North West Coal Co., Ltd.	Bienfait.....		2	2	6	2	Bienfait
Parkinson, Lewis and Tom.....	Estevan.....	5, 12	22, 27	2	7	2	Bienfait
South Cambrian, Ltd.	Pinto.....	8	6	2	7	2	Bienfait
Western Dominion Coal Mines, Ltd.	Taylorlton.....		35	1	6	2	Pinto
Wheeler & Enmark.....	Bienfait.....		5	2	6	2	Taylorlton
			19	2	6	2	Bienfait

SASKATCHEWAN - Continued

Souris Area - Concluded

Lessee and operator	Head office	Mine location				Mine office
		Legal Sub.	Sec.	Tp. Rge.	W. of Mer.	
Anderson, Niels.....	Estevan, Box 59.....	12, 13	28	1 8	2	Estevan
Anderson, W.H.A.....	Estevan.....	9, 15	2	2 8	2	Estevan
Bourquin & Sons, Geo.....	Estevan.....	3, 4	11	2 8	2	Estevan
Bourquin & Sons, L.E.....	Estevan, Box 287.....	9, 10	12	2 8	2	Estevan
Jenish Bros.....	Estevan, Box 510.....	10	1	2 8	2	Estevan
Kjersem, L.H. and N.L.....	Estevan.....	12, 13	28	1 8	2	Estevan
Joice, John (F. Luyke and A. Blondeau, Operators).....	Estevan.....	2	4	2 8	2	Estevan
Lomnicki, Leon.....	Estevan.....	3, 4	16	2 8	2	Estevan
Olshanski, J.....	Estevan, Box 167.....	13	33	1 8	2	Estevan
Peterson, C. (Flower Bros., Operators).....	Estevan, Box 501.....	3	4	2 8	2	Estevan
Saskatchewan Clay Products.....	Estevan.....	13	2	8	2	Estevan
Tajc, Ed. and S. Betland.....	Estevan.....	1, 2	32	1 8	2	Estevan
Tessier, Emmanuel.....	Estevan.....	13	33	1 8	2	Estevan
Roche Percée Coal Mining Col., Ltd.....	812 Boyd Bldg., Winnipeg.....	(5, 6, 7, 10, 22)	23			
		1, 2	27	1	7	2
		12	24			
		1 to 7	29	1	6	2
Robertson, Alex.....	812 Boyd Bldg., Winnipeg.....		22, 24	1	7	2
Albright, H.H.....	812 Boyd Bldg., Winnipeg.....		28-30	1	7	2

Bengough, Willow Bunch, and Wood Mountain Areas

Breton, J. and Gavin, J.....	Big Beaver.....	5	4	1 24	2	Big Beaver
Breton, James.....	Minton.....	13, 14	5	1 21	2	Minton
Brown, Alton G.....	Widewiew.....	8, 9	18	3 8	3	Widewiew
Cocking, Joseph.....	Kildeer.....	3, 4	30	1 3	2	Kildeer
Commaugnt, C.J.....	Stonehenge.....	9, 13, 14, 15	20	6 1	3	Stonehenge
Coronach Coal Mine.....	Coronach.....	5, 6	11	2 27	2	Coronach
(R.F. Gent, Operator)						
Cronan, James C. (W.T. Cronan, Operator).....	Buffalo Gap.....	5	30	2 25	2	Buffalo Gap
Desjardins, Fred, Operator for J. Paulhus.....	Willow Bunch.....	14, 15	13	5 28	2	Willow Bunch
Dolphis, Rivard.....	Harpree.....	7	4	24	2	Harpree
Dumais, O.....	Willow Bunch.....	3	24	4 27	2	Willow Bunch
Eidsness, E.....	Minton.....	9, 10	4	1 21	2	Minton
Fontaine, E., Operator for O. Beauchesne.....	St. Victor.....	10, 15	33	5 29	2	St. Victor
Fontaine, W. and A. Therrien.....	Willow Bunch.....	10, 11	23	4 27	2	Willow Bunch
Hutchinson, M.E.....	Scout Lake.....	12	13	5 30	2	Scout Lake
(C. Knutson and L. Porter, Operators)						
Kiser, Arthur F.....	Assiniboia.....	5, 6, 12	10	7 30	2	Assiniboia
(J. Selda, Operator)						
Lapointe, Louis.....	Buffalo Gap.....	5, 6	29	2 25	2	Buffalo Gap
Leatherdale, Don.....	Gladmar.....	1, 2, 7, 8	11	3 19	2	Gladmar
Lebeck, Anton (A. Shain, Operator).....	Buffalo Gap.....	9	30	2 25	2	Buffalo Gap
Lee, Austin (M. Lee, Operator).....	Big Beaver.....	7	18	2 22	2	Big Beaver
Lichter, Henry.....	Big Beaver.....	13	24	1 28	2	Big Beaver
McCuaig, M.A.....	Fife Lake.....	13	31	1 23	2	Fife Lake
Morrow, G.R., Estate.....	Big Beaver.....	16	32			
Ott, Mrs. H. (Flora).....	Bengough.....	1, 2, 8	11	2 23	2	Big Beaver
(Louis Guse, Operator)		9	3	4 23	2	Bengough
Pohl, Henry.....	Buffalo Gap.....	12, 13	2	3 25	2	Gallocks
Robinson, H. and B. Hodgson.....	East Poplar.....	15	12	2 26	2	East Poplar
Sabin, Wm.....	Minton.....	6	17	3 21	2	Minton
Salaba, Frank G.....	Willow Bunch.....	1, 2, 7, 8	17	5 27	2	Willow Bunch
Salaba, G.J. (R. McGillis, Operator).....	Willow Bunch.....	1	18	5 27	2	Willow Bunch
Sjogren, Olaf, and W. King.....	Big Beaver.....	11	30	1 23	2	Big Beaver
Straza, Dan J.....	Wood Mountain.....	4	15	5 4	3	Wood Mountain
Warren, Wm.....	Fife Lake.....	10, 15	28	1 28	2	Fife Lake
Wilhelm, Roy.....	St. Victor.....	13	2	6 30	2	St. Victor
Young, P.J.....	Minton.....	10, 15	26	3 20	2	Minton

Shaunavon and East End Areas

Armstrong, Martin.....	East End.....	10	17	7 21	3	Eastend
Bednarik, John.....	Shaunavon.....	3, 4, 5	3	9 18	3	Kelstern (5 miles NW. of Shaunavon)
Freeman, Bruce.....	South Fork.....	13	36	7 21	3	South Fork
Gernack, Fenwick.....	Maple Creek.....	15	24	8 28	3	Maple Creek
Gosselin, Clement.....	Dollard, Box 18.....	4	9	7 19	3	Dollard, S. of
Kirkpatrick, H.H.....	Shaunavon.....	16	22	7 19	3	Shaunavon
Kiss, Francis J.....	Shaunavon.....	15	19	7 18	3	Shaunavon
Lewis, George G.....	South Fork.....	10	35	7 21	3	South Fork
Spirka and Novak.....	Shaunavon.....	1	4	9 18	3	Kelstern, W. of
Wilkins, Herman W.....	Shaunavon.....	3	30	7 18	3	Shaunavon, S. of
Wilkins, Leonard F.....	Shaunavon.....					
Operators: T. Erikson.....	Shaunavon.....	4, 5, 6	23	7 19	3	Shaunavon, S. of
T. Erikson.....	Shaunavon.....	4, 5, 6	23	7 19	3	Shaunavon, S. of
G. Assels.....	Shaunavon.....	4, 5, 6	23	7 19	3	Shaunavon, S. of

ALBERTA

Ardley District

Lessee and operator	Head office	Mine location					Mine office
		Legal Sub.	Sec.	Tp.	Rge.	W. of Mer.	
Allyn Mann Construction Co.	Alix.....	3	29	38	23	4	Alix
Gordon, D.L.	Warden.....	1, 2	15	38	22	4	Warden
Johnson, A.	Delburne.....	3	17	38	23	4	Delburne
Kurp, Carl B.	Delburne.....	4	7	38	23	4	Alix
Lynass, John H.	Delburne.....	13	8	38	23	4	Delburne
Martin, Wm. G.	Delburne.....	15, 16	22	37	22	4	Delburne
McDowell, James.....	Ardley.....	10	20	38	23	4	Ardley
Schnepf, Karl.....	Delburne.....	3, 4	15	38	22	4	Delburne
Sissons, John W.	Alix.....	15, 16	33	38	23	4	Alix
Straub, R.R.	Alix.....	5	17	38	23	4	Alix

Big Valley District

Big Valley Collieries (Alberta), Ltd.	Big Valley.....	16	26	35	20	4	Big Valley
Campkin & Sons, Robt.	Lousana.....	1	23	36	22	4	Lousana
Grant, George L.	Fenn.....	1	9	35	20	4	Fenn

Brooks District

Kleenbim Collieries, Ltd.	Eyremore.....	15	16	17	17	4	Eyremore (Kitsim)
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Camrose District

Bumstad, Sigurd H.	Ohaton.....	3, 6	14	48	18	4	Ohaton
Camrose Collieries, Ltd.	Calgary, 332-7 Ave. W.	2, 7	29	46	19	4	Camrose
Proskow, Joseph.....	Dinant.....	4	13	46	19	4	Dinant
Red Flame Coal Co., Ltd.	Round Hill.....	14	19	48	18	4	Round Hill
Shute, Geo. and Partners.....	Dinant.....	8, 9	7	48	19	4	Dinant

Carbon District

Balogh Bros. (Arctic Coal Co.)	Carbon.....	16	12	29	23	4	Carbon
Campbell, C.C.	Trochu.....	9	29	33	22	4	Trochu
Davidson, D.W.	Three Hills.....	11, 14	22	31	24	4	Three Hills
East Carbon Coal Co., Ltd. (Fox Bros., Operators).....	Carbon.....	12, 13	7	29	22	4	Carbon
East Trochu Coal Co.	Trochu.....	9	14	33	23	4	Trochu
Fox, Alfred.....	Carbon.....	3	14	29	23	4	Carbon
Halbert, H., and F. Beierle.....	Trochu.....	8	14	33	23	4	Trochu
Inland Coal Co., Ltd.	Edmonton, 804 McLeod Bldg.	3	36	31	24	4	Three Hills
Knee Hill Coal Co., Ltd.	Calgary, 22 Travellers Bldg.	4	4	31	22	4	Three Hills
Nuttal and Davidson.....	Three Hills.....	1	9	31	22	4	Three Hills
Pickering, B., and Sons.....	Ghost Pine Creek.....	8	10	31	21	4	Ghost Pine Creek
Reissig, Erik.....	Trochu.....	15	14	33	23	4	Trochu

Cascade District

Kananaskis Expl. & Dev. Co., Ltd.	Toronto, 25 King St. W.	7, 8	3	23	9	5	Calgary, 231 8th Ave. W.
Canmore Mines, Ltd., The.....	Canmore.....	1	29	24	10	5	Canmore
Wheatley & Sons, Frank.....	Banff, Box 341.....	12	4	26	11	5	Anthracite

Castor District

Ainsworth, J.H.	Halkirk.....	13	25	40	16	4	Halkirk
Alberta Coal Co.	Edmonton 21 Credit Foncier Bldg.	6	20	40	15	4	Halkirk
Anonson, A., and J. Radford.....	Donalda.....	5	23	41	17	4	Donalda
Bradley, J., and O'Brien, A.	Halkirk.....	14	25	40	16	4	Halkirk
Buckle, Leonard.....	Donalda.....	12	16	42	17	4	Donalda
Castor Coal and Construction Co.	Donalda.....	3, 6	3	38	14	4	Castor
Chiswick, James.....	Castor.....	11	28	39	16	4	Gadsby
Davis & Doan.....	Gadsby.....	11	8	39	15	4	Halkirk
Dolan and Strickland.....	Halkirk.....	3, 4	27	42	17	4	Heisler
Easton, James.....	Heisler.....	14	11	37	14	4	Castor
Forestburg Collieries, Ltd.	Castor.....	15	36	40	16	4	Hastings Coulee
Glen Bank Coal Co. (Joe Tyrluk, Operator).....	Forestburg.....	16	28	42	17	4	Heisler
Gerla, B., and Runge, W.	Heisler.....	10, 11	29	41	17	4	Donalda
Howlett and Osmack.....	Donalda.....	16	2	41	16	4	Forestburg
Hronek, Joe, Sr.	Forestburg.....	4, 5	22	39	15	6	Halkirk
James, J.	Halkirk.....	13	28	40	15	4	Forestburg, S.W. of
Jones, Wm. J., Sr.	Forestburg.....	6, 11	2	44	19	4	Edberg
Komperdo & Partners.....	Forestburg.....	16	20	42	17	4	Forestburg
Lynass, John.....	Heisler.....	13	22	42	17	4	Heisler
MacPherson, N., and D. Krotch.....	Forestburg.....	10	32	40	15	4	Forestburg
	Heisler.....	8	21	42	17	4	Heisler

ALBERTA - Continued

Castor District - Concluded

Lessee and operator	Head office	Mine location					Mine office
		Legal Sub.	Sec.	Tp.	Rge.	W. of Mer.	
Mills & Sons, J.J.	Heisler	5	22	42	17	4	Heisler
Mitchinson, Thomas.	Donalda	10, 11	29	41	17	4	Donalda
Muyres, Michael, and Sons.	Forestburg.	7	32	40	15	4	Forestburg
Reed, John C.	Forestburg.	1	2	41	16	4	Forestburg
Remillard, O.V., and J.B.	Castor	15, 16	33	37	14	4	Castor
Shannon, A., and J. Lang.	Halkirk	11, 12	19	40	15	4	Halkirk
Stettler Coal Co., Ltd.	Stettler	16	26	40	16	4	Halkirk
Strader, Chas.	Halkirk	4	17	39	15	4	Halkirk
Wiltse, Floyd N.	Halkirk	11	32	39	15	4	Halkirk
Wiltse, D.H., Cordel and Pillsworth.	Forestburg.	1, 8	32	40	15	4	Forestburg
Wisla, Michael and Martin.	Rosalind	1, 8	7	43	17	4	Rosalind

Champion District

Fontana, P. and Sons.	Champion	15	33	15	23	4	Champion
Popovich, Mike.	Champion	9	8	16	23	4	Champion
Rhodes, Geo.	Champion	7	8	15	22	4	Champion
Travaglia, Carlo.	Champion	2, 3	4	16	23	4	Champion

Coalspur District

Coal Valley Mining Co., Ltd.	Edmonton, 705 McLeod Bldg.	16	26	47	20	5	Coal Valley
Foothills Collieries, Ltd.	Foothills	10	24	47	20	5	Foothills
King Coal and Lumber, Ltd.	Coalspur	7	23	48	21	5	Coalspur
Lakeside Coals, Ltd. (Mine No. 2)	Edmonton, Jasper Ave. and 93rd St.	3	14	49	21	5	Robb
McLeod River Hard Coal Co. (1941) Ltd.	Napaimo, B.C.	5	25	48	22	5	Mercoal
Sterling Collieries Co., Ltd.	Edmonton, 912 McLeod Bldg.	12	35	47	20	5	Sterco

Crowsnest District

Beaver Mine Coal Co., Ltd. (Pollo and Partners)	Beaver Mines	10	3	6	3	5	Beaver Mines
Hillcrest Mohawk Collieries, Ltd.	Bellevue		21	7	3	5	Bellevue
International Coal & Coke Co., Ltd.	Coleman	11	8	8	4	5	Coleman
McGillivray Creek Coal and Coke Co., Ltd.	Coleman	2	17	4	4	5	Coleman
Schultz, C., and L. Schultz.	Coleman	23	26	10	4	5	Coleman
West Canadian Collieries, Ltd.	Blairmore	10	20	7	3	5	Blairmore
		10	2	8	4	5	Blairmore
		15	31	6	3	5	Blairmore

Drumheller District

Aetna Coals, Ltd.	Wayne.	1	22	28	19	4	Rosedale
Arcadia Coal Mines, Ltd.	Calgary, 405 Maclean Block		7, 17	28	18	4	Willow Creek
Brilliant Coal Company, Ltd.	Drumheller.	15	10	29	20	4	Drumheller
Chambers, H.S.	Delia		22	28	18	4	Delia
Century Coals, Ltd.	Calgary, 228 Examiner Bldg.	5	9	29	20	4	Drumheller
Jones, David H.	Nacmine.	13	21	27	18	4	East Couleé
Leonhardt, Victor.	Drumheller.	8, 9	24	29	21	4	Nacmine
Livingstone, Allan.	Nacmine.	14	12	29	20	4	Drumheller
Maple Leaf Coal Co., Ltd.	Drumheller.	16	16	28	19	4	Nacmine
McLeod, J., and C. Paxton.	Drumheller.	13	32	27	18	4	Lehigh
Midland Coal Mining Co., Ltd.	Drumheller.	5, 6	1	29	20	4	Drumheller
Minute Coal Co., The.	Drumheller.	14	9	29	20	4	Drumheller
Monarch Coal Mining Co., Ltd.	Calgary, 405A-8th Ave. W.	7	14	29	20	4	Drumheller
Murray Collieries, Ltd.	East Couleé	1	20	27	18	4	Drumheller
Newcastle Collieries, Ltd.	Drumheller.	14	3	29	20	4	East Couleé
Red Deer Valley Coal Co., Ltd.	Drumheller, Box 20.	9	7	29	20	4	Nacmine
Rosedale Collieries, Ltd.	Calgary, 909 Lancaster Bldg.	14	28	28	19	4	Rosedale
		7	28	28	19	4	Aerial
Royalty Coal Mining Co.	Drumheller.	13	20	28	19	4	Wayne
Sask. Federated Co-ops., Ltd.	Saskatoon.	2	32	27	18	4	East Couleé
Sask. Federated Co-ops., Ltd.	Saskatoon.	13	11	29	20	4	Drumheller
Sterling J., and W. Friedley.	Delia		21	30	17	4	Delia
Wakaruk, J., and Partners.	Drumheller.	9, 10	22	29	20	4	Drumheller
Wayne Co-op. Assn.	Wayne.	16	7	28	19	4	Wayne
Western Gem & Jewel Collieries, Ltd.	Calgary, 607 Lancaster Bldg.	16	15	28	19	4	Cambria
Young, Tinsley, & Associates.	Cambria	11, 12, 13	18	28	19	4	Drumheller

Edmonton District

Banner Coals, Ltd.	Edmonton, 10631-92nd St.	10	8	55	24	4	Carbondale
Beaver Hills Coal Co. (C.F. MacLachlan, Operator)	Edmonton, 10123-117th St.	8, 9	2	53	21	4	Ardrossan
Beverly Coal, Ltd.	Beverly.	6	13	53	24	4	Beverly
Black Beauty Coal Co., Ltd.	Edmonton, 203 Wallace Bldg.	3	6	55	24	4	Namao
Dickinson Bros. & Knight.	Carbondale		17	55	24	4	Carbondale
Edmonton Collieries, Ltd.	Edmonton, 10322-105th St.	14	36	54	25	4	Namao
Egg Lake Coal Co.	Morinville, R.R. 2.		36	56	26	4	Morinville

ALBERTA — Continued
Edmonton District — Concluded

Lessee and operator	Head office	Mine location					Mine office
		Legal Sub.	Sec.	Tp.	Rge.	W. of Mer.	
Great West Coal Co., Ltd., The.....	Edmonton, 10157-102nd St.	10	7	53	23	4	Clover Bar
Horkulak, A.	Box 4092, South Edmonton.....	15, 16	26	51	25	4	Rabbit Hill
Houle, Adelard.....	Morinville.....	1, 2, 3, 8	36	56	25	4	Morinville
Long Coal Co., Ltd.	Namoo.....	4	31	94	24	4	Namoo
MacKinnon, J.E. and J.A.	Edmonton, 10446—Connaught Dr.	13	31	50	26	4	Edmonton
Morinville Colliery, Ltd.	Morinville.....	1	32	55	25	4	Morinville
Mucha, J.G.	South Edmonton, Box 4027.....	10	25	51	25	4	South Edmonton
Opalinski, T.	Ellerslie.....	15	25	51	25	4	Ellerslie
Ottewell Coal Co.	Clover Bar.....	4	17	53	23	4	Clover Bar
		15	36	52	24	4	
		4	25	51	25	4	
Pine Creek Collieries (Clarence Voice).....	South Edmonton, R.R. 3.....	River Lot	33	Edmonton Settlement			South Edmonton
Red Hot Coal Co., Ltd.	Edmonton, 10841-93rd St.						Forest Heights
Riverdale Coal Co., Ltd.	Edmonton, 10311 Sask. Drive.....	14	8	55	24	4	Namoo
Samis Collieries.....	Edmonton, 203 Wallace Bldg.	6	36	54	25	4	Namoo
Sinoski, Michael and Steve.....	South Edmonton, Box 4024.....	15	23	51	25	4	Ellerslie
St. Martin, Baptiste.....	Legal.....	11, 14	26	57	25	4	Legal
Starky Co., Ltd., J.B.	Edmonton, 10631-92nd St.	4	36	54	25	4	St. Albert, R.R. 2.
Sundance Mines, Ltd.	Edmonton, 10043 Jasper Ave.....	16	23	50	25	4	Cardiff

Gleichen District

Blackfoot Indian Agency.....	Gleichen.....	1	12	21	21	4	Gleichen (on reserve, S. of Cluny)
			33	20	19	4	
Castella, H., and Sons.....	Standard.....	5	11	25	22	4	Standard
Consumers Coal Co. (H. Rasmussen).....	Rosebud, Box 34.....	3	29	26	21	4	Rosebud
Lucky Strike Coal Mine (Wm. McMillan, Operator).....	Rosebud, Box 44.....	14	20	26	21	4	Rosebud

Halcourt District

Baldwin Collieries.....	Dimsdale.....	15	35	70	7	6	Dimsdale
Fraser, Wm.	Halcourt.....	8	21	70	10	6	Hinton Trail (17 mi. SW. of Beaverlodge)
							Wembley
Pinto Creek Coal Mines, Ltd.	Wembley.....	Unsurveyed	69	10		6	Wembley
Romanuk, Michael.....	Dawson Creek, B.C.....	3, 6	21	70	10	6	

Highwood District

Hard Coal Producers, Ltd.	Turner Valley.....		14, 15	19	7	5	Lineham, W. of Longview, 25 mi.
Ford Highwood Collieries, Ltd.	Toronto, Ont., 1701 Victory Bldg.			17	6	5	Standard
	80 Richmond St. W.						
Sheep River Coal Co.	Turner Valley, c/o F. Nash.....	7	24	19	6	5	Lineham, W. of W. of

Lethbridge District

Chester, J.C.....	Lethbridge, Box 5.....	9	30	9	21	4	Lethbridge
Hamilton Coal Co., J.J.	Lethbridge, Box 140.....	11	24	9	22	4	Lethbridge
Kocsis, S., and S. Varga.....	Lethbridge.....	5	8	7	21	4	Lethbridge
Lethbridge Collieries, Ltd.	Calgary, 137-9th Ave. E.....	11	30	10	21	4	Shaughnessy
		3	2	9	22	4	Lethbridge
McClain, Bly, and Conrad.....	Magrath.....		18	7	21	4	Magrath
Razzolini, Albert.....	Magrath, Box 180.....	3	7	7	21	4	Magrath
Wukusich, J.A.S.	Lethbridge, 732-12th St. "C", North	2, 7	11	8	22	4	Lethbridge, 8 mi. SW.

Milk River District

Taylor, Thos.	Lucky Strike.....	10	10	3	11	4	Lucky Strike
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Morley District

Ainsley & Sons, B.	Morley.....		3	27	7	5	Morley
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Mountain Park District

Cadomin Coal Co., Ltd.	Cadomin.....	14	31	46	23	5	Cadomin
Gregg River Collieries.....	Cadomin.....	8	28	47	24	5	Gregg River
Luscar Coals, Ltd.	Edmonton, 410 Tegler Bldg.	7	23	47	24	5	Luscar
Mountain Park Coals, Ltd.	Edmonton, 410 Tegler Bldg.		33	45	23	5	Mountain Park

ALBERTA — Continued

Nordegg District

Lessee and operator	Head office	Mine location					Mine office
		Legal Sub.	Sec.	Tp.	Rge.	W. of Mer.	
Brazeau Collieries, Ltd.	Toronto, Ont., 25 King St. W.	13	22	40	15	5	Nordegg

Pakowki District

Johnson, M.R., and E. Davis	Elkwater	10	23	8	3	4	Elkwater
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Perkisko District

Davies, G.C. (O.V. Coal Co.)	Priddis	10	4	22	3	5	Priddis
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Pembina District

Alberta Coal Co., Ltd.	Wabamun	15	9	53	4	5	Wabamun
Continental Collieries, Ltd.	Edmonton	5	33	52	5	5	Gainford
Fry, N. and Larsen, T.	Seba Beach	16	25	53	6	5	Seba Beach
Gailey, R.S., and Sons.	Devon		18	50	3	5	Devon
Gainford Collieries (1946) Ltd.	Seba Beach		34	53	6	5	Gainford
Hunt, Harold D.	Gainford		31	53	5	5	Gainford
Lang, H., and Forbes, R.	Seba Beach		30	52	4	5	Seba Beach
Lidgett, J. and L. Opheim	Entwistle	9, 16	10	54	7	5	Entwistle
Lothian Collieries, Ltd.	Edmonton, 308 Agency Bldg.		10	53	4	5	Wabamun
Miller, Edmund	Telfordville	14	13	49	3	5	Warburg
Opheim, L.T. and M.M.	Edmonton	12, 13	33	49	2	5	Telfordville
Pembina Collieries, Ltd.	Entwistle		10	54	7	5	Entwistle
Robinson, Wm.	Entwistle	5	34	53	7	5	Entwistle
Schon, K., and M.J. Hoover	Edmonton		8	50	6	5	Edmonton
Strawberry Creek Coal Co.	Warburg	11	13	49	3	5	Warburg
Stunns, James	Genesee	9, 10, 16	15	50	4	5	Genesee
Swanson Collieries, Ltd.	Edmonton		30	52	4	6	Gainford

Pincher District

Rhodes Mining Company	Lundbreck	10	26	7	2	5	Lundbreck
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Prairie Creek District

Capostinsky, J., and C.M. Woodley.....	Hinton			50	24	5	Hinton
Hinton Hard Coal Co.	Hinton	4	29	50	25	5	Hinton

Redcliff District

Naylor, C.A.	Medicine Hat, 332 Aberdeen St.	3	5	13	6	4	Medicine Hat
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Rochester District

Alexander, Marwood S.	Rochester	8	11	62	24	4	Rochester
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Saunders District

Alexo Coal Co., Ltd.	Alexo	9	27	40	13	5	Alexo (100 mi. W. of Red Deer)
Bighorn & Saunders Creek Collieries, Ltd.	Blairmore	9	24	40	13	5	Saunders

Sheerness District

Crystal Coal Co. (A.J. Bordula and Sons)	Hanna	16	12	29	13	4	Sheerness
Chinook Coal Co., Ltd.	Sheerness	1	12	29	13	4	Sheerness
Gaetz, John	Hanna, R.R. 3	1	6	29	14	4	Hanna
Ironside, T.G., & A. Glover	Hanna	12	5	34	13	4	Hanna
Little Bros.	Hanna, R.R. 1	6	29	32	13	4	Hanna
Masclangelo, John	Delia, Box 178	10	21	30	17	4	Delia
Pahl & Sons, Fred M.	Hanna, R.R. 1	7	30	32	13	4	Hanna
Sheerness Coal Co., Ltd.	Sheerness	5	19	29	12	4	Sheerness
Sterling, J., and W. Friedley	Delia		21	30	17	4	Delia

ALBERTA - Concluded

Slave District

Lessee and operator	Head office	Mine location					Mine office
		Legal Sub.	Sec.	Tp.	Rge.	W. of Mer.	
Pearson, Rybert.....	Canyon Creek.....	8, 9 5, 12	21 22	73	8	5	Canyon Creek

Taber District

Annon and Popel.....	Winnifred.....	3	27	12	10	4	Bow Island
Continental Coal Corp.....	Grassy Lake.....	4	26	9	13	4	Grassy Lake
McCracken, D., and Goring, H.....	Alderson.....		28	12	10	4	Alderson
Neufeld, J.P.....	Grassy Lake.....	4, 5	25	9	13	4	Grassy Lake
Oliver Coal Mine, Lewis.....	Taber.....	2	18	10	16	4	Taber
Southalta Coal Co., Ltd.....	Taber, Box 591.....		30	10	16	4	Taber
			12	10	17	4	Taber

Tofield District

Binder, Christopher.....	Ryley.....	5	9	49	17	4	Ryley
Black Nugget Coal Co., Ltd., The (Fred Irving, Operator)	Calgary, 604 McLean Block.....	15	11	49	18	4	Dodds
Dodds Coal Mine (Skarin & Clarke, Operators).....	Edmonton, 11115-89th Ave.....	7	14	49	18	4	Dodds
Ryley Coal Co. (Zacharchuk et al, Operators).....	Ryley.....	8	8	49	17	4	Ryley
Tofield Coal Co., Ltd.....	Tofield, Box 141.....		26	50	19	4	Tofield

Westlock District

North Point Coal Co. (Tomilson, Kaszuba & Dombroski, Operators)	Thorhild.....	1	11	60	21	4	Thorhild
Picardville Coal Co.....	Edmonton, 9732-110th St.....	8	25	58	27	4	Picardville
Thorhild Coal Co.....	Thorhild, Box 44.....	12, 13	12	60	21	4	Thorhild

Wetaskiwin District

Gill, Peter.....	Thorsby, R.R. 2.....	2, 7	3	48	27	4	Thorsby
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Whitecourt District

Hughes, Edward.....	Mayerthorpe.....	14, 15 2, 3	35 2	59 60	9 9	5 5	Mayerthorpe
Pritchard, R.F.....	Blue Ridge.....	1	31	59	10	5	Blue Ridge
Watson, Alex.....	Blue Ridge.....	16	24	59	11	5	Blue Ridge

BRITISH COLUMBIA
Vancouver Island District

Operator	Head office	Mine location	Mine office
Biggs, James.....	Nanaimo, 813 Douglas Rd.....	Harewood Ridge.....	Nanaimo
Canadian Collieries (Dunsmuir) Ltd.....	Nanaimo.....	Cumberland.....	Cumberland
		Cumberland.....	Cumberland
		Cumberland.....	Cumberland
		T'Sable River.....	T'Sable River
		Cranberry.....	South Wellington
		Cranberry.....	South Wellington
Carruthers, R.B. & W. Wakelem.....	Nanaimo, 328 Wallace St.; Box 68	Wellington.....	Nanaimo
Chambers, Ralph H.....	Nanaimo, 86 Victoria Rd.....	Extension.....	Nanaimo
Hamilton, Robt. N., and Associates.....	Nanaimo.....	Extension.....	Extension
Lewis, Glyn, and Jos. Wilson.....	Nanaimo, 508 Rosehill Ave.....	Timberlands.....	Timberlands
Loudon, Wm. D., and Associates.....	Nanaimo, 328 Wallace St., Box 68	Wellington.....	Nanaimo
McKellar, Ross & Carroll.....	Nanaimo, 715 Nicol St.....	Cassidy.....	Cassidy
Stronach, C.....	Wellington.....	Wellington.....	Wellington

BRITISH COLUMBIA — Concluded

Nicola-Princeton District

Operator	Head office	Mine location	Mine office
Inland Collieries, Ltd.	Princeton.....	Princeton, 6 mi. SW. of.....	Princeton
Taylor-Burson Coal Co., Ltd.	Princeton.....	Princeton, 4 mi. W. of.....	Princeton
Tulameen Collieries, Ltd.	Vancouver, 716 Hall Bldg.	Princeton, 2 mi. W. of.....	Princeton
Thomas, C.E.	Merritt.....	Merritt, 1 mi. S. of.....	Merritt

Northern District

Gething, King.....	Hudson Hope.....	Portage Mountain, east slope of	Hudson Hope, 12 mi. from
Peace River Coal Mines Ltd.	Victoria, 106 Union Bldg.	Portage Mountain, west slope of	Hudson Hope, 18 mi. from
Reschke, S.	Hudson Hope.....	Butler Range.....	Hudson Hope, 23 mi. W. of
Bulkley Valley Collieries, Ltd.	Telkwa, Box 3.....	Goat Creek, trib. of Telkwa River	Telkwa
Telkoal Co., Ltd.	Telkwa, Box 27.....	Telkwa River, south bank of...	Telkwa

East Kootenay District

Hillcrest Mohawk Collieries, Ltd.	Bellevue, Alberta.....	Corbin, B.C.	Corbin, B.C.
Crow's Nest Pass Coal Co., Ltd., The.....	Fernie.....	Michel Creek.....	Fernie, 21 mi. NE. of
		Coal Creek.....	Fernie, 4 mi. E. of

YUKON and NORTHWEST TERRITORIES

Yukon Coal Co., Ltd.	Carmacks (Executive Office: 1001 — 85 Richmond St. W., Toronto, Ont.)	On Lewes River, approx. 100 mi. NW. of Whitehorse.	Carmacks
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The Natural Gas Industry

- Note. 1. Distributing.
2. Drilling and producing
3. Drilling only.
4. Using or selling gas from absorption plant.

Name	Head office address	Location of field
NEW BRUNSWICK:		
Moncton Electricity & Gas Co. Ltd ¹	700 Main St., Moncton.....	
New Brunswick Oilfields Ltd.....	P.O. Box 194, Moncton.....	Stoney Creek
ONTARIO:		
Acme Gas Syndicate.....	Ridgeway.....	Bertie
Amer-Can Gas & Oil Co.....	215 King St. W., Chatham.....	Dover, Tilbury E. and Walpole
Barnhart, Mrs. E.....	Stevensville.....	Bertie
Bates, Norman.....	R.R. No. 3, Port Colborne.....	Humberstone
Beachville Natural Gas Syndicate ¹	Beachville.....	
Beaver Oil & Gas Syndicate.....	67 Yonge St., Toronto.....	Walpole
Belmont Gas Co.....	Belmont.....	
Benn, A.S.....	Hagersville.....	Walpole
Benner, K.W.....	Fisherville.....	Rainham
Benner & Tinney.....	Fisherville.....	Walpole and Rainham
Bertie Township Gas & Oil Syndicate.....	Fisherville.....	Bertie and Willoughby
Big Seven Gas Syndicate.....	Fisherville.....	Rainham
Binbrook Gas Co.....	Binbrook.....	Binbrook
Brindley & Harper.....	Bradford, Pa., U.S.A.....	Brantford
Broadway Gas Syndicate.....	Cayuga.....	Walpole
Buck, C.S.....	Port Rowan.....	Walsingham South
Burchell Natural Gas & Oil Syndicate.....	R.R. No. 2, Listowel.....	Woodhouse
Canada Cement Co. Ltd.....	Montreal, Quebec.....	Wainfleet
Canadian Natural Gas Syndicate.....	Simcoe.....	Bayham and Moulton
Canfield Natural Gas Co. Ltd.....	Dunnville.....	Cayuga North
Cartwright, S.E.....	2377 Penobscot Bldg., Detroit, Mich., U.S.A.....	Walpole
Cayuga Gas Syndicate.....	Cayuga.....	Cayuga South
Central Pipe Line Co. Ltd. ²	Aylmer West.....	Bayham, Houghton, Malahide and Yarmouth
Central Senaca Gas Syndicate.....	Cayuga.....	Seneca
Chippawa Creek Gas Syndicate.....	Fort Erie.....	Willoughby
Chitra Gas Syndicate ¹	Wellandport.....	Canboro
Coleman, Ada S.....	Stevensville.....	Bertie
Coronation Gas Syndicate.....	R.R. No. 4, Welland.....	Crowland and Humberstone
Crowland Gas Syndicate ²	Merlin.....	Tilbury East
Dawson, R.....	Fisherville.....	Middleton
Dean Gas Syndicate.....	Fort Erie.....	Bertie
Deanna Lee Gas Syndicate.....	Cayuga.....	Windham
Delhi Gas Syndicate.....	R.R. No. 2, Lowbanks.....	Moulton
Dickout Bros.....	R.R. No. 2, Fort Erie.....	Bertie
Di Martile, T.....	220 Delaware Ave., Buffalo 2, N.Y., U.S.A.....	Norfolk, Haldimand, Welland, Essex and Kent
Dominion Natural Gas Co. Ltd.....	Drawer 200, Fort Erie.....	Woodhouse
Dover Gas Syndicate.....	Dunnville.....	Dunn and Sherbrooke
Dun Natural Gas Co. Ltd.....	Ridgeway.....	Humberstone
Elgin Prospecting Syndicate.....	Stevensville.....	Humberstone
Elk Development Syndicate.....	Dunnville.....	Moulton, Canboro, Wain- fleet and Gainsboro
Emerson, H.L.....	Ridgeway.....	Walpole
Erie Prospecting Syndicate.....	430 Gilles St. W., Windsor.....	Malden
Essex Gas & Oil Ltd.....	Petrolia.....	Enniskillen
Fairbanks Co.....	Drawer 200, Fort Erie.....	Stamford
Falls View Gas Syndicate.....	Fisherville.....	Rainham
Fisherville Gas Co.....	Fort Erie.....	Bertie
Fleet Manufacturing Ltd.....	R.R. No. 2, Gleanford Station.....	Binbrook
Fletcher, Eva.....	R.R. No. 2, Selkirk.....	Rainham
Fletcher & Messner.....	Portland, Indiana, U.S.A.....	
Fonthill & Ridgeway Gas Co. Ltd. ¹	161 Thorold Rd., Welland.....	Thorold
Fox, E.S.....	Fisherville.....	Bertie
Frontier Gas Syndicate.....	Drawer 200, Fort Erie.....	Bertie
Garrison Gas Syndicate.....	703 Capitol Park Bldg., Detroit, Mich., U.S.A.....	Raleigh
Gas Producers Co.....	84 Jarvis St., Fort Erie.....	Bertie
George, Mrs. A.....	Cayuga.....	Cayuga South
Gifford, A. & Son.....	Dunnville.....	Canboro
Glenney, E.....	Dunnville.....	
Goodfellow, G. ³	Kingsville.....	Gosfield S. and Romney
Gosfield Properties Ltd.....	Canfield.....	Cayuga North
Grand River Gas & Oil Syndicate ²	Welland.....	Thorold
Gresham & Langan.....	Grimsby.....	Welland, Gainsboro, Canboro
Grimsby Natural Gas Co. Ltd.....	Hagersville.....	Walpole
Hagersville Quarries Ltd.....	R.R. No. 1, Chippawa.....	Willoughby
Haidon & Chambers ²	Stevensville.....	Bertie
Haldimand Natural Gas Syndicate.....	Chatham.....	Raleigh
Highbank Oil Ltd.....	Wainfleet.....	Wainfleet
Hock, A.....	Dunnville.....	Moulton
Houk Syndicate.....	Stevensville.....	Bertie
House, C.C.....	Fisherville.....	Rainham
Ideal Gas Syndicate.....		

The Natural Gas Industry — Continued

Name	Head office address	Location of field
ONTARIO — Continued		
Imperial Oil Ltd.	56 Church St., Toronto	Moore, Sombra, Raleigh, Tilbury W., Romney and Dover
Jackson, F.W. ³	R.R. No. 1, Sarnia	
Jackson, P.L.	Dunnville	Walpole, Moulton, Canboro, Cayuga North, Rainham, Dunn, Crowland, Cayuga S., and Woodhouse
Jackson & Craff	Dunnville	Crowland
Jenkins, S.S.	282 North St., Buffalo, N.Y., U.S.A.	Bertie and Townsend
Kent Gas Syndicate	York	Walpole
Kerr, Robert S.	Port Colborne	Seneca
Kramer, H.	54 Hambly Ave., Toronto	Humberstone
Lake Erie Gas Syndicate	Ridgeway	Rainham
Lake Shore Gas & Oil Syndicate	Stevensville	Bertie
Lapp & Arendt		Bertie and Humberstone
Leamington, Town of ¹	Leamington	
Lincoln Natural Gas Ltd.	Malton	Canboro, Moulton, Claistor, Gainsboro and Wainfleet
Little, R.W.	222 Humbercrest Blvd., Toronto	Onondaga
Locators Oils Ltd.	22 King St. W., Toronto	Cayuga South and Middleton
London, City of, Gas Co. ¹	215 Dundas St., London	Cayuga North, Rainham and Walpole
Lymburner Bros. & Webber	Dunnville	Walpole
McKechnie, S., Estate	Dunnville	Walpole
McMaster, R. & Sons	Caledonia	Binbrook
Mehlenbacher, L. B. Gas Syndicate	Cayuga	Cayuga North and Walpole
Meyers, Paul	Fort Erie	Willoughby
Minor & Luck	Cheltenham	Sherbrooke
Mohawk Gas & Oil Syndicate	421 Main St. E., Hamilton	Oneida and Walpole
Monarch Gas & Oil Syndicate	Fisherville	Walpole, Dunn and Cayuga South
Morningstar, R.	Ridgeway	Bertie
Nevada Gas Syndicate	Drawer 200, Fort Erie	Thorold
Niagara Gas Syndicate	Fisherville	Bertie
Niagara Natural Gas Co. Ltd.	Fort Erie	Moulton
Neece, Elmond	Dunnville	Sherbrooke
Norotto Gas Co. Ltd. ¹	Norwich	
North Cayuga Gas Co.	Cayuga	Cayuga North
North Shore Gas Co.	Selkirk	Rainham
Noyes, L.A.	Stevensville	Willoughby
Oil Springs Oil & Gas Co. ¹	Oil Springs	
Paisco, J. ¹	Wainfleet	
Patterson, W.C. Gas Co. Ltd. ²	P.O. Box 914, Jamestown, New York, U.S.A.	Dunn, Rainham, Walpole, Cayuga N., Wainfleet, Willoughby, Crowland and Humberstone
Patterson & Culver	Dunnville	Oneida
Peacock Point Gas & Oil Syndicate	Fisherville	Walpole
Petrol Oil & Gas Co. Ltd.	414 Bay St., Toronto	Oneida, Onondaga and Tuscarora
Port Colborne-Welland Gas Co. ²	Port Colborne	Onondaga, Oneida, Seneca and Cayuga North
Povec Gas Syndicate	Tillsonburg	Canboro
Prairie Gas & Oil Co. Ltd.	350 Bay St., Toronto	Dover
Provincial Gas Co. Ltd.	Fort Erie	Humberstone, Willoughby, Bertie and Crowland
Purcifer, R.	Stevensville	Humberstone
Queenston Gas & Oil Co. Ltd.	Drawer 200, Fort Erie	Willoughby, Walsingham South, Oneida and Woodhouse
Rainham Gas Syndicate	Cayuga	Rainham
Reicheld, F.W. ²	Jarvis	Walpole
Riverside Syndicate	Welland	Welland
Rocks Mills Gas & Oil Syndicate	510 Huron & Erie Bldg., London	Norwich South
Romney Gas & Oil Co. Ltd.	18 Toronto St., Toronto	Wainfleet
Roth, Frank	Ridgeway	Bertie
Rowe, E.P. Estate	403 Atlas Bldg., Toronto	Raleigh and Dover
Royal Gas Syndicate	Stevensville	Bertie
Salina Gas Co. Ltd.	Chatham	Tilbury East
Sandusk Gas Syndicate	Fisherville	Walpole
Sarnia Oil & Gas Co. Ltd.	302 Bay St., Toronto	Emmiskillen
Schweyer, Benner & Tinney ³	Fisherville	
Shank, E.	R.R. No. 2, Selkirk	Oneida and Rainham
Shank & Snively	Selkirk	Oneida
Sherk, Perry	Sherkston	Humberstone
Sherk & Carothers	Sherkston	Humberstone
Sherk & Leam	Sherkston	Humberstone
Sherk & Nagel	South Cayuga	Bertie
Shurt, Ivan	Stevensville	Rainham
Sider, Andrew & Jesse	Stevensville	Bertie and Humberstone
Sider, Norman	Sherkston	Humberstone
Sider, Ralph	Ridgeway	Bertie
Smith, Harry B.	Windsor	Romney
Smith & Ebde	Lowbanks	Moulton, Dunn and Bayham
Standard Gas & Oil Syndicate	Fisherville	Rainham and Walpole
Star Gas Syndicate	Ridgeway	Crowland, Humberstone and Bertie

The Natural Gas Industry — Concluded

Name	Head office address	Location of field
ONTARIO — Concluded		
Stevensville Natural Gas & Fuel Co.....	Stevensville.....	Bertie
Stewart, Elgin.....	Jarvis.....	Walpole
Stover, F.H. & Associates.....	Chatham.....	Raleigh
Stromwell Gas Syndicate.....	Tillsonburg.....	Moulton
Sundy Gas Wells.....	Dunnville.....	Canboro
Swayze, Harry.....	Hagersville.....	Oneida
Tanke, Eugene.....	414 Delaware Ave., Buffalo, New York, U.S.A.....	Thorold
Tanner, F.O. Estate.....	1650 Penobscot Bldg., Detroit, Mich., U.S.A.....	Cayuga North and Oneida
Tarr, Norman ³	Port Dover.....	
Till Gas Syndicate.....	Tillsonburg.....	Walpole
Tyrrill, E.W.....	Drawer 200, Fort Erie.....	Bertie
Union Gas Co. of Canada Ltd.....	Chatham.....	Tilbury, D'Clute, Dover, Dawn, Camden Gore, Zone, Haldimand and Chatham
Victoria Gas Co.....	Dunnville.....	Rainham and Walpole
Victory Oil & Gas Co.....	510 Huron and Erie Bldg., London.....	Windham
Walpole Gas Syndicate.....	Cayuga.....	Walpole, Cayuga, North Seneca and Walsingham S.
Walter Gas Syndicate Ltd ²	Simcoe.....	Woodhouse, Walsingham S., Townsend and Walpole
Warren Gas Syndicate ²	Cayuga.....	Bayham and Dereham
Welland County Gas Syndicate.....	Stevensville.....	Bertie
West Petroleum Ltd.....	50 King St. W., Toronto.....	Romney
Western Ontario Natural Gas Co. Ltd.....	Dunnville.....	Cayuga North, Canboro and Dunn
Wilkinson Gas Syndicate.....	Fort Erie.....	Thorold
Willoughby Gas Syndicate.....	R.R. No. 1, Chippawa.....	Humberstone
Wood, Ray.....	Chatham.....	Townsend
SASKATCHEWAN:		
Bata Petroleum Ltd.....	310 Broder Bldg., Regina.....	Unity
Franco Oils Ltd.....	Vermilion.....	Lone Rock
Lloydminster Gas Co. Ltd. ²	Lloydminster.....	Lloydminster
Northern Gas Distributors Ltd.....	Kamsack.....	Kamsack
Northern Utilities Ltd.....	Lloydminster.....	Lloydminster
ALBERTA:		
Alberta Clay Products Co. Ltd.....	Medicine Hat.....	Medicine Hat
Alberta Pacific Royalties Ltd.....	201 Lancaster Bldg., Calgary.....	Turner Valley
Allied Royalties Ltd.....	201 Lancaster Bldg., Calgary.....	Turner Valley
Amalgamated Oils Ltd.....	900 Lancaster Bldg., Calgary.....	Turner Valley
Anglo-Canadian Oil Co. Ltd.....	900 Lancaster Bldg., Calgary.....	Turner Valley
Argus Royalties Ltd.....	900 Lancaster Bldg., Calgary.....	Turner Valley
Arrow Oil Royalties Ltd.....	804 Southam Bldg., Calgary.....	Turner Valley
Atlantic Oil Co. Ltd.....	304 Toronto General Trust Bldg., Calgary.....	Leduc
Alas Investments Ltd.....	720 Stock Exchange Bldg., Vancouver, B.C.....	Turner Valley
Bow Island, Town of ¹	Bow Island.....	
British American Oil Co. Ltd ¹	Royal Bank Bldg., King & Yonge Sts., Toronto.....	Turner Valley
British Dominion Oil & Development Corp. Ltd.....	213 Dominion Bank Bldg., Calgary.....	Taber, Conrad and Princess
California Standard Co.....	703 Lancaster Bldg., Calgary.....	Turner Valley
Calmont Oils Ltd.....	303 Toronto General Trusts Bldg., Calgary.....	Medicine Hat
Canadian Pacific Railway Co.....	Montreal, Quebec.....	Brooks
Canadian Western Natural Gas Co. Ltd.....	215 Sixth Ave. W., Calgary.....	Redcliff
Canadian Western Power & Fuel Co. Ltd.....	Third St. Redcliff.....	Turner Valley
Coastal Oils Ltd.....	232 Lougheed Bldg., Calgary.....	Turner Valley
Commonwealth Petroleum Ltd.....	122 - 8th Ave. W., Calgary.....	Turner Valley
Crude Oils Ltd.....	304 Toronto General Trusts Bldg., Calgary.....	Turner Valley
Davies Petroleum Ltd.....	403 Lancaster Bldg., Calgary.....	Turner Valley
Deep Oils Ltd.....	304 Toronto General Trusts Bldg., Calgary.....	Suffield
Department of National Defence.....	Suffield.....	Turner Valley
Drillers & Producers Ltd.....	304 Toronto General Trusts Bldg., Calgary.....	Medicine Hat and Redcliff
Dominion Glass Co. Ltd.....	1111 Beaver Hall Hill, Montreal, Quebec.....	Princess
Empire Petroleum Ltd.....	304 Toronto General Trusts Bldg., Calgary.....	Turner Valley
Extension Oil Royalties Ltd.....	900 Lancaster Bldg., Calgary.....	Turner Valley
Foothills Oil & Gas Co. Ltd.....	300 Ninth Ave. W., Calgary.....	Vermilion
Franco Public Service Ltd. ^{1,2}	Vermilion.....	
Gas & Oil Refineries Ltd ⁴	301 Lancaster Bldg., Calgary.....	Redcliff
Gundersen Brick & Coal Co. Ltd.....	Redcliff.....	Turner Valley
Harris Wells Ltd.....	201 Lancaster Bldg., Calgary.....	Turner Valley
Home Oil Co. Ltd.....	226 Lougheed Bldg., Calgary.....	Turner Valley, Leduc, Woodbend, Redwater, Viking and Kinsella
Imperial Oil Ltd.....	56 Church St., Toronto, Ontario.....	Fabyan
Inland Oil & Gas Co. Ltd.....	36 Dominion Bank Chambers, Edmonton.....	Turner Valley
Kamalta Ltd.....	201 Lancaster Bldg., Calgary.....	Turner Valley
Major Oil Investments Ltd.....	407 Lancaster Bldg., Calgary.....	Medicine Hat
Maple Leaf Milling Co. Ltd.....	Dominion Bank Bldg., Toronto, Ontario.....	Medicine Hat
Medicine Hat Bricks & Tile Co. Ltd.....	P.O. Box 100, Medicine Hat.....	Medicine Hat
Medicine Hat, City of.....	Medicine Hat.....	Turner Valley
Miracle Royalties Wells.....	301 Lancaster Bldg., Calgary.....	Turner Valley
Model Oils Ltd.....	201 Lancaster Bldg., Calgary.....	Turner Valley
Newfold Royalties Ltd.....	232 Lougheed Bldg., Calgary.....	Turner Valley
Northwestern Utilities Ltd.....	10124 - 104th St., Edmonton.....	Viking and Kinsella
Ogile Flour Mills Co. Ltd.....	Medicine Hat.....	Turner Valley
Pacific Petroleum Ltd.....	304 Toronto General Trusts Bldg., Calgary.....	Redcliff
Redcliff Premier Brick Co. Ltd.....	Redcliff.....	Redcliff
Redcliff Pressed Brick Co. Ltd.....	Redcliff.....	Turner Valley
Royalite Oil Co. Ltd ⁴	606 Second St. W., Calgary.....	Turner Valley
Southwest Petroleum Co. Ltd.....	300 - 9th Ave. W., Calgary.....	Suffield
Suffield Gas Supply.....	Suffield.....	Turner Valley
Sunset Oils Ltd.....	302 Toronto General Trusts Bldg., Calgary.....	Leduc
Taylor Petroleum Operators Ltd.....	308 - 8th Ave. W., Calgary.....	Turner Valley
Three Point Petroleum Ltd.....	232 Lougheed Bldg., Calgary.....	Turner Valley
United Assets Ltd.....	232 Lougheed Bldg., Calgary.....	
Valley Gas Co. Ltd. ¹	614 Lancaster Bldg., Calgary.....	Turner Valley
Vulcan Brown Petroleum Ltd.....	232 Lougheed Bldg., Calgary.....	Wainwright
Wainwright Gas Co. Ltd.....	36 Dominion Bank Bldg., Edmonton.....	Wetaskiwin
Wetaskiwin, City of.....	Wetaskiwin.....	Turner Valley
Winnipeg Royalties Ltd.....	301 Lancaster Bldg., Calgary.....	Turner Valley
York Oils Ltd.....	221A - 8th Ave. W., Calgary.....	
NORTHWEST TERRITORIES:		
Imperial Oil Ltd.....	56 Church St., Toronto, Ontario.....	Fort Norman

THE CRUDE PETROLEUM INDUSTRY

Name	Head office address	Location of field
NEW BRUNSWICK:		
New Brunswick Oilfields Ltd.	Moncton	Stoney Creek
ONTARIO¹:		
Austin, Gordon	Bothwell	Orford
Barnes Bros.	Box 259, Petrolia	Petrolia and Enniskillen
Barnes, A. G.	Box 552, Petrolia	Petrolia and Enniskillen
Byers Bros.	Oil Springs	Petrolia and Enniskillen
Canadian Oil Companies Ltd.	Oil Springs	Petrolia and Enniskillen
Chandler, H. & C.	Terminal Building, Toronto	Petrolia and Enniskillen
Cole, W. J.	Box 91, Petrolia	Petrolia and Enniskillen
Corey, Harrison	Tank St., Petrolia	Petrolia and Enniskillen
Dennis, Mrs. L.	Oil Springs	Petrolia and Enniskillen
Domestic Gas & Oil Co. Ltd.	Bothwell	Zone
Dominion Petroleum Co. Ltd. ²	R.R. 2, Glencoe	Mosa
Donald, George	Oil Springs	Petrolia and Enniskillen
Edward, F. H.	Box 125, Petrolia	Petrolia and Enniskillen
Fairbank, J. H. Estate	Box 264	Petrolia and Enniskillen
Heal, Andrew A.	215 King St. W., Chatham	Warwick
High Grade Natural Gas Co. Ltd.	Bothwell	Zone
Holmes, E. B.	Box 849, Petrolia	Petrolia and Enniskillen
Howlett, Fred W., & Sons Ltd.	56 Church St., Toronto	Petrolia and Enniskillen
Imperial Oil Ltd. (Eastern Canada Exploration)	Petrolia	Petrolia and Enniskillen
Irving, Robert	R.R. 2, Petrolia	Petrolia and Enniskillen
Irwin, Foster	Petrolia	Petrolia and Enniskillen
Johnson, E.	Petrolia	Petrolia and Enniskillen
Kells, E. E.	Petrolia	Petrolia and Enniskillen
Kelly, J. E. Estate	Box 706, Petrolia	Petrolia and Enniskillen
Kerr, John, Estate	Petrolia	Petrolia and Enniskillen
Kodyen, E. A.	Bothwell	Zone
Lehman, Lloyd A.	Box 514, Petrolia	Petrolia and Enniskillen
Leverton, W. R.	Bothwell	Zone
Lewis, L. & W.	Oil Springs	Petrolia and Enniskillen
Lewis & Byers	Oil Springs	Petrolia and Enniskillen
MacGillivray, M.	Oil Springs	Petrolia and Enniskillen
Marcus, Andrew	Bothwell	Zone
Marcus, Louis	Wallacetown	Dunwich
McCrie, Mrs. S.	Bothwell	Zone
McCutcheon, P.	Oil Springs	Petrolia and Enniskillen
Mitchell, Charles	Oil Springs	Petrolia and Enniskillen
Mitchell, R.	Oil Springs	Petrolia and Enniskillen
Morningstar, George	Oil Springs	Petrolia and Enniskillen
Morningstar, H. M.	Oil Springs	Petrolia and Enniskillen
Ontario Lands & Oil Co.	Petrolia	Petrolia and Enniskillen
Pope, H. O.	Bothwell	Zone
Pope, Wm. Jr.	Bothwell	Zone
Prairie Gas & Oil Co. Ltd.	301 Bay St., Toronto	Dover East
Rowe, E. P., Estate	390 Bay St., Toronto	Dover East and Raleigh
Saroline Oil Co.	Petrolia	Petrolia and Enniskillen
Shain, Viola	R.R. 3, Petrolia	Petrolia and Enniskillen
Slack, C. M.	Petrolia	Petrolia and Enniskillen
Stanley & McCrie	Bothwell	Camden Gore
Sutherland, B. M.	Petrolia	Petrolia and Enniskillen
Thompson, Arnold	Petrolia	Petrolia and Enniskillen
Tunks, James	Bothwell	Zone
Union Gas Company of Canada Ltd.	Chatham	Zone
Warwick, Joseph	Oil Springs	Petrolia and Enniskillen
Warwick & McMillan	Bothwell	Orford
Williamson, M. J.	Petrolia	Petrolia and Enniskillen
Wilson-Sullivan Development Co. ²	112 S. Christina St., Sarnia	Warwick
Winnett, J. W. G.	418½ Talbot St., London	Orford, Mosa and Zone
Woodward, Wm.	Oil Springs	Petrolia and Enniskillen
Yerks, Frank	Petrolia	Petrolia and Enniskillen
SASKATCHEWAN:		
Alpen & Associates	221 Hall Building, Vancouver, British Columbia	Lone Rock
Bata Petroleum Ltd.	310 Broder Building, Regina	Unity
Command Oils Ltd.	4 Clarence Block, Calgary, Alberta	Lloydminster
Community Petroleum Ltd.	402 Northern Crown Building, Regina	Lloydminster
Cyprus & Rosen	234 First Ave. S., Saskatoon	Lloydminster
Franco Castle Syndicate	678 Howe St., Vancouver, British Columbia	Petrolia and Enniskillen
Franco Oils Ltd.	Vermilion, Alberta	Lone Rock
Hale, W. A.	Calgary, Alberta	Lloydminster
Highwood Sarcee Oils Ltd.	614 Lancaster Building, Calgary, Alberta	Lloydminster
Humboldt Petroleum Syndicate	Humboldt	Lloydminster
Husky Oil & Refining Ltd.	Lloydminster	Lloydminster
Ibstone Petroleum Ltd.	North Battleford	Lloydminster
Karels & Federspiel Ltd.	Lloydminster	Lloydminster
Karels & Rennie	Swift Current	Lloydminster
Lloydminster Development Co. Ltd.	Lloydminster	Lloydminster
Lone Rock Oils Ltd.	213 Dominion Bank Building, Calgary, Alberta	Lloydminster and Lone Rock
Mitton Oils	Box 369, Lloydminster	Lloydminster
National Petroleum & Withers-Groat Syndicates	509 8th Ave. W., Calgary, Alberta	Lloydminster
Northeast Syndicate	509 8th Ave. W., Calgary, Alberta	Lloydminster
Rogers Alberta Syndicate	5 New Craig Block, North Battleford	Lloydminster
Rogers Bailey Syndicate	5 New Craig Block, North Battleford	Lloydminster
S.A.C. Oils Ltd.	569 Howe St., Vancouver, British Columbia	Lloydminster
Stalwart Gas & Oil Syndicate	Stalwart	Lloydminster
Vanlloyd Oils Ltd.	569 Howe St., Vancouver, British Columbia	Lloydminster
Wilton Oils Ltd.	Lloydminster	Lloydminster

1. Producer of 300 barrels or more during the year.

2. Producer and driller.

The Crude Petroleum Industry — Continued

Name	Head office address	Location of field
ALBERTA:		
Alberta Oil Incomes Ltd.	301 Lancaster Building, Calgary	Turner Valley
Alberta Oil Producers Ltd.	800 Hall Building, Vancouver, British Columbia	Vermilion
Alberta Pacific Royalties Ltd.	201 Lancaster Building, Calgary	Turner Valley
Alberta-Washington Petroleum Ltd.	111 McFarland Building, Lethbridge	Del Bonita
Allied Royalties Ltd.	201 Lancaster Building, Calgary	Turner Valley
Amalgamated Oils Ltd.	900 Lancaster Building, Calgary	Turner Valley
Anglo-Canadian Oil Co. Ltd.	900 Lancaster Building, Calgary	Turner Valley
Apex Consolidated Resources Ltd.	36 Toronto St., Toronto, Ontario	Vermilion
Argus Royalties Ltd.	900 Lancaster Building, Calgary	Turner Valley
Arrow Oil Royalties Ltd.	804 Southam Building, Calgary	Turner Valley
Associated Oil & Gas Co. Ltd.	200 Leeson-Lineham Block, Calgary	Turner Valley
Athlone Syndicate	112 Thomson Building, Edmonton	Lloydminster
Atlantic Oil Co. Ltd.	304 Toronto General Trusts Building, Calgary	Leduc
Atlas Investments Ltd.	720 Stock Exchange Building, Vancouver, British Columbia	Turner Valley
Baltac Oils Ltd.	200 Leeson-Lineham Block, Calgary	Turner Valley
Barsac Royalties Ltd.	303 Toronto General Trusts Building, Calgary	Turner Valley
Baxter Lake Oils Ltd.	403 Lancaster Building, Calgary	Wainwright
BeeJay Syndicate	Lloydminster	Lloydminster
Blackfoot Oils Ltd.	407 Tegler Building, Edmonton	Vermilion
Borradale Oils Ltd.	330 Bay St., Toronto, Ontario	Lloydminster
British American Oil Co. Ltd. ¹	Royal Bank Building, Toronto, Ontario	Turner Valley
British Colonial Oils Ltd.	809 Second St. W., Calgary	Turner Valley
British Dominion Oil & Development Corp. Ltd.	213 Dominion Bank Building, Calgary	Turner Valley
British Empire Oil Developments Ltd.	401 Leeson-Lineham Block, Calgary	Taber, Conrad and Princess
California Standard Co.	706 Lancaster Building, Calgary	Princess
Calmont Oils Ltd.	303 Toronto General Trusts Building, Calgary	Turner Valley
Calwin Royalties Ltd.	301 Lancaster Building, Calgary	Turner Valley
Cannar Oils Ltd.	360 McGill St., Montreal, Quebec	Vermilion
Castle Petroleum Syndicate	678 Howe St., Vancouver, British Columbia	Lloydminster
Century Royalties Ltd.	102 Bank of Commerce Building, Calgary	Turner Valley
Coastal Oils Ltd.	232 Loughheed Building, Calgary	Turner Valley
Command Oils Ltd.	407 Tegler Building, Edmonton	Lloydminster
Commercial Oil Producers Ltd.	122 8th Ave. W., Calgary	Turner Valley
Commonoil Ltd.	122 8th Ave. W., Calgary	Turner Valley
Commonwealth Drilling Co. Ltd. ²	122 8th Ave. W., Calgary	Turner Valley
Commonwealth Petroleum Ltd.	122 8th Ave. W., Calgary	Turner Valley
Continental Oil Co. of Canada Ltd.	407 Lancaster Building, Calgary	Turner Valley
Crest Royalties Ltd.	201 Lancaster Building, Calgary	Turner Valley
Crude Oils Ltd.	304 Toronto General Trusts Building, Calgary	Turner Valley
D. & D. Royalties Ltd.	606 Second St. W., Calgary	Turner Valley
Dalhousie Oil Co. Ltd.	201 McCallum Hill Building, Regina, Saskatchewan	Lloydminster
Dalo Oil Co. Ltd.	36 Toronto St., Toronto, Ontario	Vermilion
Davenport Traders Ltd.	409 Lancaster Building, Calgary	Turner Valley
Davies Petroleum Ltd.	304 Toronto General Trusts Building, Calgary	Turner Valley
Deep Oils Ltd.	65 Canada Life Building, Calgary	Vermilion and Lloydminster
De Koch, Wm. G.		Lloydminster
Drillers & Producers Ltd.	304 Toronto General Trusts Building, Calgary	Turner Valley
East Crest Oil Co. Ltd.	212 Grain Exchange Building, Calgary	Turner Valley
Edmonton-Wainwright Oils Ltd.	8 McDougall Court, Edmonton	Wainwright
Empire Petroleum Ltd.	304 Toronto General Trusts Building, Calgary	South Princess
Extension Oil Royalties Ltd.	900 Lancaster Building, Calgary	Turner Valley
Federal Oils Syndicate	308 Lancaster Building, Calgary	Princess
Federated Petroleum Ltd.	422 Loughheed Building, Calgary	Turner Valley
Foothills Oil & Gas Co. Ltd.	300 9th Ave. W., Calgary	Turner Valley
Four Star Petroleum Ltd.	232 Loughheed Building, Calgary	Turner Valley
Frano Oils Ltd.	Vermilion	Vermilion
Gas & Oil Products Ltd.	301 Lancaster Building, Calgary	Leduc
Gas & Oil Refineries Ltd. ¹	301 Lancaster Building, Calgary	Lloydminster
Gateway Oils Ltd.	209 Agency Building, Edmonton	Turner Valley
Gem Royalties Ltd.	403 Lancaster Building, Calgary	Lloydminster
Godfrey-Lehman Lloydminster Syndicate	303 Lancaster Building, Calgary	Wainwright
Gold Standard Oils Ltd.	Wainwright	Turner Valley
Granville Oils Ltd.	122 8th Ave. W., Calgary	Turner Valley
Harris Wells Ltd.	201 Lancaster Building, Calgary	Turner Valley
Highwood-Sarcee Oils Ltd.	614 Lancaster Building, Calgary	Turner Valley
Home Oil Co. Ltd.	226 Loughheed Building, Calgary	Turner Valley and Leduc
Imperial Oil Ltd.	56 Church St., Toronto, Ontario	Leduc
Independent Royalties Ltd.	403 Lancaster Building, Calgary	Turner Valley
Kaskela Well Operators Ltd.	201 Lancaster Building, Calgary	Turner Valley
Leduc Consolidated Oils Ltd.	403 Lancaster Building, Calgary	Turner Valley
Lion Oil Producing Co. Ltd.	200 McLean Block, Calgary	Lloydminster
Lloyd-Leduc Oils Ltd.	Lloydminster	Lloydminster
Lloydminster Oil Producers Ltd.	407 Tegler Building, Edmonton	Turner Valley
Major National Oils Ltd.	407 Lancaster Building, Calgary	Turner Valley
Major Oil Investments Ltd.	111 Ardern Block, Calgary	Turner Valley
Maryland Petroleum Ltd.	405 8th Ave. W., Calgary	Turner Valley
McDougall-Sigur Exploration Co. of Canada Ltd.	301 Lancaster Building, Calgary	Conrad
Mercury Oils Ltd.	213 Dominion Bank Building, Calgary	Turner Valley
Mid Continent Oil & Gas Ltd.	301 Lancaster Building, Calgary	Turner Valley
Miracle Oils Ltd.	301 Lancaster Building, Calgary	Turner Valley
Miracle Royalties Ltd.	201 Lancaster Building, Calgary	Turner Valley
Model Oils Ltd.	717 Lancaster Building, Calgary	Turner Valley
Model Spooner Syndicate	401 Somerset Building, Winnipeg, Manitoba	Lloydminster
Nathan Investments & T. A. Sparks	401 Leeson-Lineham Building, Calgary	Turner Valley
National Petroleum Corp. Ltd.	401 Leeson-Lineham Building, Calgary	Turner Valley
Okalta Oils Ltd.	Renfrew Building, Calgary	Turner Valley
Pacific Petroleum Ltd.	304 Toronto General Trusts Building, Calgary	Lloydminster
Pacific Western Oil Co. Ltd.	107 Bank of Commerce Building, Calgary	Wainwright
Pan Western Oils Ltd.	Ingraham Building, Calgary	Del Bonita
Paragon Oils Ltd.	111 McFarland Building, Lethbridge	Lloydminster
Petromine Exploration & Finance Co. Ltd.	9 Toronto St., Toronto, Ontario	

The Crude Petroleum Industry — Concluded

Name	Head office address	Location of field
ALBERTA — Concluded		
Regal Royalties Ltd.....	403 Leeson-Lineham Building, Calgary.....	Turner Valley
Renown Royalties Ltd.....	201 Lancaster Building, Calgary.....	Turner Valley
Reward Spooner Model Ltd.....	717 Lancaster Building, Calgary.....	Turner Valley
Royal Canadian Oils Ltd.....	403 Lancaster Building, Calgary.....	Turner Valley and Lloydminster
Royal Crest Petroleum Ltd.....	232 Lougheed Building, Calgary.....	Turner Valley
Royalite Model Oil Co. Ltd.....	201 Lancaster Building, Calgary.....	Turner Valley
Royalite Oil Co. Ltd. ³	606 Second St. W., Calgary.....	Turner Valley
S.A.C. Oils (Alberta) Ltd.....	569 Howe St., Vancouver, British Columbia.....	Lloydminster
Saskahead Oils Ltd.....	Indian Head, Saskatchewan.....	Vermilion
Shamrock Oils.....	Lloydminster.....	Lloydminster
Share Oils Ltd.....	Elks Building, Calgary.....	Turner Valley
Shaw Alberta 3 Syndicate.....	Lloydminster.....	Turner Valley
Shell Oil Co. of Canada Ltd.....	25 Adelaide St. E., Toronto, Ontario.....	Lloydminster
Silverdale Syndicate.....	c/o Royal Trust Co., Edmonton.....	Jumping Pound
Southwest Petroleum Co. Ltd.....	300 9th Ave. W., Calgary.....	Lloydminster
Sovereign Royalties Ltd.....	209 6th Ave. W., Calgary.....	Turner Valley
Sterling Royalties Ltd.....	102 Bank of Commerce Building, Calgary.....	Turner Valley
Sunburst Oil Co. Ltd.....	800 Lancaster Building, Calgary.....	Turner Valley
Sunset Oils Ltd.....	302 Toronto General Trusts Building, Calgary.....	Turner Valley
Superior Oils Ltd.....	509 8th Ave. W., Calgary.....	Lloydminster
Taylor Petroleum Operators Ltd.....	308 8th Ave. W., Calgary.....	Leduc
Three Point Petroleum Ltd.....	232 Lougheed Building, Calgary.....	Turner Valley
Turner Valley Royalties Ltd.....	232 Lougheed Building, Calgary.....	Turner Valley
Twin Valley Oil Royalties Ltd.....	804 Southam Building, Calgary.....	Turner Valley
United Assets Ltd.....	232 Lougheed Building, Calgary.....	Turner Valley
Vanpeg Royalties Ltd.....	301 Lancaster Building, Calgary.....	Turner Valley
Vulcan Brown Petroleum Ltd.....	232 Lougheed Building, Calgary.....	Turner Valley
Wain Con Oil Co. Ltd.....	112 Thomson Building, Edmonton.....	Wainwright
West End Syndicate.....	Box 60, Saskatoon, Saskatchewan.....	Lloydminster
Westside Royalties Ltd.....	232 Lougheed Building, Calgary.....	Turner Valley
Winalta Royalties Ltd.....	301 Lancaster Building, Calgary.....	Turner Valley
York Oils Ltd.....	221-A Eighth Ave. W., Calgary.....	Turner Valley
NORTHWEST TERRITORIES:		
Imperial Oil Ltd. (Norman Wells).....	56 Church St., Toronto, Ontario.....	Fort Norman

1. Operates an absorption plant.

2. Drilling only.

3. In addition to operating and drilling wells in the Turner Valley field, this company operates an absorption plant.

The Asbestos Mining Industry

Name of firm	Head Office or General Office	Location of mine
QUEBEC:		
Asbestos Producers Corporation ¹	1410 Stanley St., Montreal, Quebec	Coleraine
Asbestos Corporation Ltd.	Theftord Mines, Quebec	Theftord Mines, Black Lake, Coleraine
Asbestos Crude & Fibre Mines Ltd. ¹	1410 Stanley St., Montreal, Quebec	Coleraine
Bell Asbestos Mines Ltd.	Theftord Mines, Quebec	Theftord Tp.
Canadian Johns-Manville Co. Ltd.	Sun Life Building, Montreal, Quebec	Asbestos
Flintkote Mines Ltd.	Theftord Mines, Quebec	Theftord Mines
Johnson's Company	Theftord Mines, Quebec	Theftord Mines, Coleraine
International Asbestos Co. Ltd. ¹	66 Wellington St. North, Sherbrooke, Quebec	St. Adrien de Ham
Nicolet Asbestos Mines Ltd.	220 Transportation Building, Montreal, Quebec	Norbestos
Potash Company of America	321 First National Bank Bldg., Denver, Colorado, U.S.A.	Ireland Tp., Coleraine Tp.
Quebec Asbestos Corp. Ltd.	East Broughton Station, Quebec	East Broughton Station
Standard Asbestos Mines, Ltd. ¹	111 Mountain Hill, Quebec	Beauceville
United Asbestos Corp. Ltd. ¹	132 St. James St. W., Montreal	Black Lake
Windsor Mine ¹	50 Falardeau St., Theftord Mines	Coleraine

1. Carried on exploration or development work only.

The Feldspar and Quartz Mining Industry

- | | |
|----------------------|-------------------------------|
| 1. Produces silica | 4. Produces nepheline syenite |
| 2. Produces feldspar | 5. Produces scapolite |
| 3. Operates a mill | 6. Produces grinding pebbles |

Name of firm	Head office address	Location of mine or mill
NOVA SCOTIA:		
Dominion Steel & Coal Corp. Ltd. ¹	Sydney	Cheggoggin Point
Nairn, J.	24 Whitney Ave., Sydney	Letches Creek
QUEBEC:		
Belval, T. ²	Farnham	Farnham
Bigelow, Gordon ²	Glen Almond	Derry Tp.
Bigelow, Robt. & Sons ²	Buckingham	Portland East Tp.
Bon Ami Ltd. ^{2, 3}	13719 Notre Dame St. E., Montreal	Montreal
Broulet Sand & Gravel Co. Ltd. ¹	Rawdon	Rawdon
Canada China Clay & Silica Ltd. ¹	1600 Royal Bank Bldg., Toronto, Ontario	Amherst Tp.
Canadian Carborundum Co. Ltd. ^{1, 3}	Box 57, Niagara Falls, Ontario	St. Canut
Canadian Flint & Spar Co. Ltd. ^{1, 2, 3}	Room 512 Victoria Bldg., Ottawa, Ontario	Buckingham
Consumers Industrial Minerals Ltd. ²	8661 Drolet St., Montreal	Montcalm Co.
Feldspar Products Ltd. ²	1224 St. Catherine St., Montreal	Papineau
Champagne, L.	1834 rue Champlain, Montreal	Berthier Co.
Kensington Industries Ltd. ²	1224 St. Catherine St. W., Montreal	Buckingham
Laroque & Hebert ^{1, 2}	Glen Almond	Buckingham
Lachaine, Régis ²	St. Pierre de Wakefield	Wakefield
Law, S.H. ^{1, 2}	Room 28, 14 Toronto St., Toronto, Ontario	Derry Tp.
McGill, Lawrence ²	Pointe-au-Chêne	Grenville
St. Lawrence Alloys & Metals Ltd. ^{1, 3}	Beauharnois	Beauharnois Co.
Suzorite Co. Ltd. ²	907 Dominion Square Bldg., Montreal	Shawinigan Falls
Wallingford, Wm. & A.O. ²	Gatineau Point	Cantley
ONTARIO:		
American Nepheline Corp. ⁴	Lakefield	Methuen Tp.
Bancroft Mica & Stone Products ^{2, 3}	Bancroft	Faraday Tp.
Bathurst Feldspar Mines Ltd. ²	Room 508-21 King St. E., Toronto	Bathurst Tp.
Buffalo Ankerite Gold Mines Ltd. ⁵	Box 533, South Porcupine	Deloro Tp.
Canadian Flint & Spar Co. Ltd. ²	512 Victoria Bldg., Ottawa	Bedford Tp.
Canadian Silica Corp. (Ltd.) ²	100 Adelaide St. W., Toronto	Little Current
Conger Feldspar Mining Co. Ltd. ²	10 Adelaide St. E., Toronto	Conger Tp.
Craig, T.H. ²	46 Acacia Road, Toronto	Bathurst Tp.
Dominion Mines & Quarries Ltd. ^{1, 3}	Canada Life Bldg., Toronto	Killarney
Hybla Feldspar Corp. Ltd. ²	33 Melinda St., Toronto	Monteagle Tp.
International Nickel Co. of Canada Ltd. ¹	Copper Cliff	Lawson Tp.
Kingston Silica Mines Ltd. ^{1, 3}	R.R.No. 1, Kingston	Pittsburg Tp.
Laurentian Feldspar Corp. Ltd. ²	104 Sparks St., Ottawa	Perth
Opeongo Mining Co. ²	1631 Benjamin Ave., Windsor	Dickenson Tp.
Shaw, E. ²	Parry Sound	Parry Sound
Vardy, D.C. ^{2, 3}	Box 70, Bancroft	Monteagle Tp.
Wright and Co. ^{2, 3}	960 Queen St., Sault Ste. Marie	Deroche Tp.
SASKATCHEWAN:		
Hudson Bay Mining & Smelting Co. ¹	Flin Flon, Manitoba	Flin Flon
BRITISH COLUMBIA:		
Consolidated Mining & Smelting Co. Ltd. ¹	Trail	Fairview

The Gypsum Mining Industry

Name of firm	Head office address	Plant location
NOVA SCOTIA:		
Canadian Gypsum Co. Ltd.	170 Bloor St. W., Toronto, Ontario	Wentworth
Conn. Adamant Plaster Co.	10 River St., New Haven, Conn., U.S.A.	Cheverle
National Gypsum (Canada) Ltd.	325 Delaware Ave., Buffalo, New York, U.S.A.	Walton, Dingwall
Victoria Gypsum Co. Ltd.	Little Narrows.	Little Narrows
Windsor Plaster Co. Ltd.	Windsor.	Brooklyn, Hants Co.
NEW BRUNSWICK:		
Canadian Gypsum Co. Ltd.	170 Bloor St. W., Toronto, Ontario	Hillsborough
ONTARIO:		
Canadian Gypsum Co. Ltd.	170 Bloor St. W., Toronto, Ontario	Hagersville
Cayuga Gypsum Co. Ltd.	Cayuga	North Cayuga Tp.
Gypsum, Lime & Alabastine, Canada, Ltd.	Paris.	Caledonia
MANITOBA:		
Gypsum, Lime & Alabastine, Canada, Ltd.	Paris, Ontario	Gypsumville
Western Gypsum Products Ltd.	503 McArthur Bldg., Winnipeg	Amaranth
BRITISH COLUMBIA:		
Gypsum, Lime & Alabastine, Canada, Ltd.	Paris, Ontario	Falkland
Western Gypsum Products Ltd.	McArthur Bldg., Winnipeg, Manitoba	Mayook
Columbia Gypsum Products Inc.	Royal Trust Bldg., Vancouver	Windmere
Arthur Howard.	Fort Steele	Mayook

The Peat Industry

1. Produces moss.
2. Active but no shipments made.
3. Produces humus.
4. Produces peat fuel.

Name of firm	Head office address	Location of bog or plant
NEW BRUNSWICK:		
Atlantic Peat Moss Co. Ltd. ¹	513 Rachel St. E., Montreal, Quebec	Gloucester
Wafard Peat Moss Co. ¹	Shippegan.	Shippegan
Western Peat Co. Ltd. ¹	Box 699, New Westminster, British Columbia	Shippegan
QUEBEC:		
Allied Peat Moss Corp. ¹	Cacouna.	Cacouna
Beauséjour Peat Moss ¹	St. Romald.	St. Lambert
Bourque & Fils ¹	319 rue Lafontaine, Rivière-du-Loup	St. Marc des Carrières
Excel Peat Ltd. ¹	Les Escoumains	Isle aux Coudres
Dubois, Oscar ²	303A Lafontaine St., Rivière-du-Loup	Saguenay
Maple Leaf Peat Ltd. ¹	Waterville.	St. Antonin
R. & B. Moss & Peat Products ¹	Isle Verte.	Waterville
Michaud, J. P. A. ¹	Isle Verte.	Isle Verte
Premier Peat Moss Ltd.	Isle Verte.	Isle Verte
Perfect Peat Products ¹	303 Lafontaine St., Rivière-du-Loup	St. Antonin
Quebec Peat Moss Co. ¹	St. Guillaume d'Upton	St. Bonaventure
Roy, Romeo ¹	St. Ulric	St. Ulric
Saguenay Peat Moss Co. Ltd. ¹	187 Jacques Cartier, Chicoutimi.	Bagot Tp.
Senneterre Peat & Moss Mines Ltd. ¹	Senneterre.	Senneterre
Tourbières Rivière-Ouelle ¹	2 Cote d'Abraham, Quebec	Rivière Ouelle
Tourbières de Pointe-au-Père ¹	Mont Joli.	Pointe au Père
Trump Peat Products Ltd. ¹	Rivière du Loup.	Rivière du Loup
Tourbière de St. Fabien.	St. Fabien.	St. Fabien
Tourbière de Rivière Blanche.	Rivière Blanche.	Matane Co.
ONTARIO:		
Arctic Peat Moss Corp. Ltd. ¹	200 Sterling Securities Bldg., Winnipeg, Manitoba	Crozier
Hugar Corporation Ltd. ³	Suite 1010, 100 Adelaide St. W., Toronto	Beverley Tp.
Atkins & Dubrow (Etie) Ltd. ¹	Box 500, Port Colborne	Windfset Tp.
Leasa Peat Works ^{1,4}	106 Britannia St., Stratford	Ellice Tp.
Pinewood Peat Inc. ¹	Barwich	Pinewood
Fringie, J. A. ¹	Arden	Arden
MANITOBA:		
Winnipeg Supply & Fuel Co. Ltd. ¹	812 Boyd Bldg., Winnipeg	Shelley
McCabe Bros. Grain Co. Ltd.	980 Grain Exchange Bldg., Winnipeg	Shelley
BRITISH COLUMBIA:		
Acme Peat Products Ltd. ¹	799 W. Pender St., Vancouver	Lulu Island
Alouette Peat Products Ltd. ¹	Plit Meadows	McTavish Road
Atkins & Dubrow	317 Royal Bank Bldg., Vancouver	Delta
B.C. Peat Company Ltd. ¹	302 Royal Bank Bldg., Vancouver	Delta
Byrnerood Peat Farm ¹	2707 McKay Ave., New Westminster	Burnaby
Blundell Peat Co. Ltd.	806 No. 6 Road, Vancouver	No. 6 Road
Coast Peat Co. Ltd. ¹	736 Granville St., Vancouver	Burnaby
Columbia Products Ltd. ¹	Box 699, New Westminster	Lulu Island
Excelsior Peat Ltd. ¹	7675 Olser Ave., Vancouver	Burnaby
Industrial Peat Co. ¹	Box 329, New Westminster	Delta Municipality

The Peat Industry — Concluded

Name of firm	Head office address	Location of bog or plant
BRITISH COLUMBIA — Concluded		
Lulu Island Peat Co. Ltd. ¹	R.R. 2, Vancouver.....	Lulu Island
Nielsen, E., and M.F. ¹	R.R. 2, Vancouver.....	Westminster
Northern Peat Moss Co. Ltd. ¹	R.R. 2, Vancouver.....	Richmond Tp.
North American Peat.....	209-744 Hastings St. W., Vancouver.....	Burnaby
Pacific Peat Products Ltd. ¹	1137 W. Hastings St., Vancouver.....	R.R. 2, Vancouver
Richmond Peat Products Limited ¹	814 Hall Bldg., Vancouver.....	Lulu Island
Western Peat Co. Ltd. ¹	Box 699, New Westminster.....	Lulu Island

The Salt Industry

Name of firm	Head office address	Location of plant
NOVA SCOTIA:		
Malagash Salt Co. Limited.....	196 Provost St., New Glasgow.....	Cumberland Co.
Maritime Industries Ltd.	Amherst.....	Nappan
ONTARIO:		
Brunner, Mond Canada, Ltd.	Canadian Bank of Commerce Bldg., Toronto.....	Essex Co.
Canadian Industries Limited.....	Box 10, Montreal, Que.	Essex Co.
Goderich Salt Co. Ltd.	Box 577, Goderich.....	Goderich
Sifto Salt Co. Ltd.	2240 Sun Life Bldg., Montreal, Que.	Samia
Warwick Pure Salt Co. Ltd.	R.R. 5, Watford.....	Lambton Co.
Purity Flour Mills Ltd.	287 MacPherson Ave., Toronto.....	Goderich
MANITOBA:		
Canadian Industries Ltd.	Box 10, Montreal, Que.	Neepawa
ALBERTA:		
Alberta Salt Co. Ltd.	Memorial Walk, Edmonton, Alta.....	Lindbergh
Industrial Minerals Ltd.	2240 Sun Life Bldg., Montreal, Que.	Waterways

The Talc and Soapstone Industry

Name of firm	Head office address	Location of plant or mine
QUEBEC:		
Baker Mining & Milling Co. Ltd.	4010 St. Catherine St. W., Montreal.....	Highwater
Broughton Soapstone & Quarry Co. Ltd.	Broughton Station.....	Broughton
Fortin, Charles.....	Robertsonville.....	Thetford Tp.
Pharo, L.C., Co. Ltd.	1 Victoria St., Thetford Mines.....	Leeds Tp.
ONTARIO:		
Canada Talc Limited.....	Madoc.....	Huntingdon Tp.

The Miscellaneous Non-Metal Mining Industries

1. Active but not producing.
2. Recover sulphur from smelter gas.

Name of operator	Head office address	Plant location
Barite:		
NOVA SCOTIA:		
Canadian Industrial Minerals Ltd.	Walton.....	Walton
ONTARIO:		
Woodhall Mines Ltd.	347 Bay St., Toronto.....	Langmuir
BRITISH COLUMBIA:		
Mountain Minerals Ltd.	Box 273, Lethbridge, Alberta.....	Golden M.D.
Brucite:		
QUEBEC:		
Aluminum Company of Canada Ltd.	Sun Life Bldg., Montreal.....	Wakefield
Davis, Norman B.	512 Victoria Bldg., Ottawa, Ontario.....	Wakefield

The Miscellaneous Non-Metal Mining Industries — Continued

Name of operator	Head office address	Plant location
Diatomite:		
NOVA SCOTIA:		
Wightman, Mrs. G.W.	Smith's Cove.....	Digby Co.
BRITISH COLUMBIA:		
Fairey and Co.	661 Taylor St., Vancouver.....	Cariboo M.D., Vancouver
Fluorspar:		
ONTARIO:		
Cardiff Fluorite Mines Ltd.	26 Queen St. E., Toronto.....	Wilberforce
Millwood Fluorspar Mines Ltd.	Box 206, Madoc.....	Madoc Dist.
Reliance Fluorspar Mining Synd. Ltd.	Madoc.....	Huntingdon Tp.
Stocklosar, Chas. A.	Box 198, Madoc.....	Huntingdon Tp.
Garnet:		
ONTARIO:		
Niagara Garnet Co.	c/o Wm. A. Yarwood, 8573 Krull Parkway, Niagara Falls, New York, U.S.A.	River Valley
Graphite:		
ONTARIO:		
Frobisher Exploration Co. Ltd.	Black Donald Mines.....	Brougham Tp.
Grindstones:		
NEW BRUNSWICK:		
Read, H.C.	Bathurst.....	Stonehaven
Bay of Chaleur Grindstone Co.	Clifton.....	Clifton
Iron Oxide:		
QUEBEC:		
Argall, Mrs. Thomas H.	1695 Blvd. St. Louis, Trois Rivières.....	Pointe du Lac
Begin Iron Oxide Mine.....	Cassier 197, Trois Rivières.....	Chemin des Forges
Girardin, Chas. D.	Yamachiche.....	Almaville en Haut
Lafrenière, Philias.....	St. Louis de France.....	St. Louis de France
The Sherwin-Williams Co. of Canada Ltd. ¹	2875 Centre St., Montreal.....	Red Mill, Champlain Co.
Vennes, Wm.	90 — 6ème Ave., Grand'Mère.....	St. Adelphe
BRITISH COLUMBIA:		
British Columbia Electric Co. Ltd.	425 Carrall St.	Alta Lake
Lithium Minerals:		
QUEBEC:		
Canadian Lithium Co. Ltd. ¹	57 Queen St. W., Toronto, Ontario.....	Landrienne Tp.
LaCorne Lithium Mines Ltd. ¹	320 Bay St., Toronto, Ontario.....	LaCorne Tp.
MANITOBA:		
Lithium Corp. of Canada Ltd. ¹	403 Avenue Bldg., Winnipeg.....	Bernic and Cat Lakes
Sheritt Gordon Mines Ltd. ¹	25 King St. W., Toronto, Ontario.....	Herb Lake
Magnetite Dolomite:		
QUEBEC:		
Canadian Refractories Ltd.	1050 Canada Cement Bldg., Montreal.....	Kilmar and Harrington
Mineral Waters:		
QUEBEC:		
Benedict-MacPeak Mineral Exploration.....	420 Lagauchetière St., Montreal.....	St. Agnes
Cie d'eau Minérale, de St. Hyacinthe.....	632 Concord Ave., St. Hyacinthe.....	St. Hyacinthe
Eau Minérale Etolle.....	St. Genevieve de Batiscan.....	Batiscan
Orange Crush Ltd.	1016 Bleury St., Montreal.....	Varennes
Lemay, Lucien.....	St. François du Lac.....	Nicolet Tp.
Gauthier, Charles.....	Louisville.....	St. Leon
Minard, Edward.....	Maskinonge.....	Maskinonge
Montclair-Richelieu Spring Water Co. Ltd.	Chambly Basin.....	Chambly
Pellerin, A., and Sons.....	St. Barnabe N.	St. Maurice
Paille, J.J.	Maskinonge.....	Maskinonge
Sources Abenakis Springs Ltd.	366 rue Racine, Granby.....	St. François du Lac
Source Colombiia.....	L'Epiphanie.....	L'Epiphanie
Source d'eau Minérale Radnor.....	St. Maurice.....	St. Maurice
Usine d'Emboutillage Maski.....	St. Justin.....	St. Justin
ONTARIO:		
Carlsbad Springs, The.....	Carlsbad Springs.....	Gloucester Tp.
Deneault, J.F.	Bourget.....	Bourget
Mica:		
QUEBEC:		
Blackburn Bros.	85 Sparks St., Ottawa, Ontario.....	Cantley
Bole, Floyd.....	Cantley.....	Cantley
Bon Ami Ltd.	13719 Notre Dame St. E., Pointe aux Trembles.....	Buckingham
Charbonneau, L.	Perkins Mills.....	Perkins
Chamberot, E.	78 Chauveau St., Hull.....	Cantley

The Miscellaneous Non-Metal Mining Industries — Concluded

Name	Head office address	Plant location
Mica — Concluded:		
QUEBEC:		
Cross, W. C.	209 Bridge St., Hull	Cantley
de Rainville, Paul.....	Perkins	Templeton
Egan, J. J.	Box 94, Hull.....	Cantley
Gauthier, J. B.	Box 226, Buckingham	Cantley
Gagne, Marc	Cascades	Denholm
Groulx & Cherney.....	195 Gigués St., Ottawa, Ontario.....	Gatineau
Joannesse, Leo	31 Graham St., Hull.....	Gatineau
Lavoie, S.	Waltham	Hincks
Lamoureux, O.	Hull	Hincks
McGarry, W. P.	Wakefield.....	Hull
Murphy, Philip	Gatineau Point.....	Hull Tp.
Marcoux, G.	13 Champagne, Hull	Hull Tp.
Mica Co. of Canada	2 Lois St., Hull.....	Hull Tp.
Palement, B.	Perkins Mills	Hull Tp.
Prud'homme, Réal.....	Perkins	Papineau
Prud'homme, Oscar	Perkins	Templeton
Pink Lake Mica Mines	Perkins	Templeton
Foirier, Adélaïde	Old Chelsea	Hull
Regal Mortgage & Discount	Wilson's Corners	Wilson's Corners
Renaud, J.	196 Sparks St., Ottawa, Ontario.....	Wilson's Corners
Sabourin, V.	Perkins	Perkins
Suzorite Co. Ltd.	Perkins	Perkins
Szele, Len	907 Dominion Square Bldg., Montreal	McCarthy
Wallington, Ed.	Wakefield.....	Hull Tp.
Wilson, Neil.....	Perkins	Templeton
	Cantley	Hull Tp.
ONTARIO:		
Bancroft Mica & Stone Co.	Selby	Faraday Tp.
Cordick, H. V.	Perth	Lanark
Donnelly, J. G.	Stanleyville.....	N. Burgess Tp.
Lemieux, Frank	Godfrey	Bedford Tp.
Loughborough Mining Co. Ltd.	Sydenham	Frontenac
Powers, Art	Rm 201, 23 Scott St., Toronto.....	Burgess Tp.
Rochester, R. B.	Sydenham	Thirty Island Lake
Spaulde, W. J.	21 Isabella St., Perth.....	Frontenac
Watts, R. W.		Lanark
BRITISH COLUMBIA:		
Fairey & Co.	661 Taylor St., Vancouver	Vancouver
Phosphate:		
QUEBEC:		
Bigelow, Robert ¹	Buckingham	Bowman Tp.
Blackburn Bros. Ltd.	85 Sparks St., Ottawa, Ontario.....	Perkins
High-Rock Phosphates Ltd. ¹	41 Main St., Buckingham	Portland W. Tp.
Cross, Stanley ¹	28 Warren Ave., Ottawa, Ontario	Hull Tp.
ONTARIO:		
Ontario Phosphate Industries Ltd. ¹	Room 1101, 62 Richmond St. W., Toronto.....	Bedford Tp.
Silica Brick:		
NOVA SCOTIA:		
Dominion Steel & Coal Corp. Ltd.	Sydney	Sydney
ONTARIO:		
Algoma Steel Corp. Ltd.	Sault Ste. Marie	Sault Ste. Marie
Sodium Carbonate:		
BRITISH COLUMBIA:		
Bishop, V. C. (Mrs.).....	c/o Boyds Garage, Clinton	Clinton area
Sodium Sulphate:		
SASKATCHEWAN:		
Horseshoe Lake Mining Co. Ltd. ¹	Ormiston	Ormiston
Midwest Chemicals Ltd.	Palo	Whiteshore Lake
Natural Sodium Products Ltd.	Bishopric	Frederic Lake, Alsask
Sybouts Sodium Sulphate Co. Ltd.	Gladmar	Gladmar
Saskatchewan Minerals	401 Westman Chambers, Regina	Chaplin
Sulphur — Pyrite:		
QUEBEC:		
Noranda Mines Ltd.	Royal Bank Bldg., Toronto, Ontario.....	Noranda
Waite-Amulet Mines Ltd.	Noranda	Duprat Tp.
ONTARIO:		
International Nickel Company of Canada Ltd. ²	Copper Cliff	Copper Cliff
BRITISH COLUMBIA:		
Consolidated Mining & Smelting Company of Canada Ltd. ²	Trail.....	Trail
Britannia Mining & Smelting Co. Ltd.	Britannia Beach	Britannia Beach

The Portland Cement Industry

Name of firm	Head office address	Location of plant
QUEBEC:		
Canada Cement Company Limited.....	Box 290, Station B, Montreal.....	Hull, Montreal East
ONTARIO:		
Canada Cement Company Limited.....	Box 290, Station B, Montreal, Quebec.....	Belleville, Port Colborne
St. Mary's Cement Co. Limited.....	357 Bay St., Toronto.....	St. Mary's
MANITOBA:		
Canada Cement Company Limited.....	Box 290, Station B, Montreal, Quebec.....	Fort White
ALBERTA:		
Canada Cement Company Limited.....	Box 290, Station B, Montreal, Quebec.....	Exshaw
BRITISH COLUMBIA:		
British Columbia Cement Co. Limited.....	500 Fort St., Victoria.....	Bamberton

THE DOMESTIC-CLAY PRODUCTS INDUSTRY

Brick and Tile

Name of firm	Head office address	Location of plant
NOVA SCOTIA:		
The Foley Pottery Ltd.	45 Bayside Drive, Saint John, New Brunswick.....	Middle Musquodoboit
Harriss & Harriss.....	5 Byng Ave., Sydney.....	Sydney
Shaw, L.E., Ltd. ^{1, 2}	Box 1135, Halifax.....	Elmsdale and New Glasgow
Standard Clay Products Ltd. ^{1, 2}	St. Johns, Quebec.....	New Glasgow
NEW BRUNSWICK:		
Ryan Brick & Tile Ltd. ¹	Box 1135, Halifax, Nova Scotia.....	Fredericton
Shaw, L.E., Ltd. ²	Box 1135, Halifax, Nova Scotia.....	Chipman
QUEBEC:		
Ascot Brique Engr. ¹	Ascot Corner.....	Ascot Corner
Castonguay, Hubert.....	Deschailions.....	Deschailions
Citadelle Brique Ltée.....	14 rue St. Joseph, Quebec.....	Beaufort E. and Boischatel
Desmarais, S.E. & Cie ¹	Richmond.....	Richmond
East Angus Brick & Tile Reg'd ^{1, 2}	Box 553, East Angus.....	East Angus
Laprairie Co. Inc., The.....	906 University Tower Bldg., Montreal.....	Laprairie and Delson Junction
Montreal Terra Cotta Ltd. ¹	1010 Ste. Catherine St. W.....	Deschailions and Lakeside
Potvin, Arthur.....	Mitchell Station.....	Mitchell Station
Potvin & Chandonnet.....	Deschailions.....	Deschailions
Roy, F. & D. ¹	St. George West.....	St. George West
St. Lawrence Brick Co. Ltd. ²	1010 Ste. Catherine St. W., Montreal.....	Laprairie
St. Tite Briquerie Ltée ¹	St. Tite.....	St. Tite
Scott Brique Ltée, La ¹	Scott Junction.....	Scott Junction
Standard Clay Products Ltd. ¹	Box 189, St. Johns.....	St. Johns
ONTARIO:		
Barnes, Wm. R., Co. Ltd. ¹	243 Cumberland Ave., Hamilton.....	Waterdown
Bracebridge Brick Works ¹	Bracebridge.....	Bracebridge
Brampton Pressed Brick Co. Ltd. ²	Brampton.....	Brampton
Broadwell, B. & Son ¹	Box 537, Kingsville.....	Gosfield S. Tp.
Canadian Pressed Brick Co. Ltd. ¹	Kenilworth Ave. S., Hamilton.....	Hamilton
Central Tile Brick Corp. Ltd. ¹	Tilbury.....	Bell River and Tilbury
Construction Materials Ltd. ^{1, 2}	Drawer 70, New Toronto.....	New Toronto
Cooksville Co. Ltd. ²	46 Bloor St. W., Toronto.....	Cooksville
Cornhill, Jas. & Sons Ltd. ¹	Box 36, Chatham.....	Harwich Tp.
Coulis, Geo. & Sons ²	Theford.....	Bosanquet Tp.
Curtin, F. Estate ¹	R.R.4, Lindsay.....	Lindsay
Curtis Bros. ¹	Box 809, Peterborough.....	Otonabee Tp.
Deller, Albert & Son ¹	Brownsville.....	Brownsville
Dochart Brick & Tile Works ¹	Box 397, Arnprior.....	Arnprior
Donaldson, Thomas G. ¹	R.R.1, Greenock.....	Culross Tp.
Douglas, John R. & Sons ¹	Wilkesport.....	Wilkesport
Dresden Tile Yard ¹	R.R.2, Dresden.....	Dresden
Elliott's Brickyard ¹	555 Wellington St. W., Sault Ste. Marie.....	Korah Tp.
Elliott, Wm. ¹	R.R.1, Glenannan.....	Glenannan
Fletcher Brick & Tile ¹	Fletcher.....	Tilbury E. Tp.
Frid Bros. Ltd. ¹	790 Main St. W., Hamilton.....	Hamilton
Hamilton Pressed Brick Co. Ltd. ^{1, 2}	211 Kensington Ave., S. Hamilton.....	Wentworth Co.
Hill, Aaron ¹	Essex.....	Essex
Hill, A.W. & Sons ¹	Coatsworth.....	Tilbury E. Tp.
Hodder's Tile Yard ¹	Dutton.....	Dutton
Howlett, Fred W. & Sons Ltd. ¹	Box 849, Petrolia.....	Petrolia
Huntsville Brick Works ¹	Box 219, Huntsville.....	Huntsville
Interprovincial Brick Co. Ltd. ²	46 Bloor St. W., Toronto.....	Hamilton and Milton
Janes, D.A. ¹	Mt. Brydges.....	Caradoc Tp.
Koebel, C. & Son ¹	Box 3, St. Clements.....	St. Clements
Lindsay, Earl & Sons ¹	R.R.2, Wallaceburg.....	Wallaceburg

1. Clay used 2. Shale used 3. Idle, 1948 4. Producers bentonite.

The Domestic-Clay Products Industry — Continued

Name	Head office address	Location of plant
ONTARIO — Continued:		
Martin, Amos C. ¹	R.R.3, Wallenstein	Peel Tp.
McFarlane, W. J. ¹	Forest	Forest
McFarren, F. B. Ltd. ²	120 Wellington St. W., Toronto	Streetsville
Milton Brick Co. Ltd. ²	170 Bloor St. W., Toronto	Milton
Napanee Brick & Tile Works	R.R.3, Napanee	Napanee
National Fireproofing Co. of Canada Ltd. ^{1, 2}	57 Bloor St. W., Toronto	East Fiamboro Tp.
National Sewer Pipe Co. Ltd. ^{1, 2}	320 Bay St., Toronto	Hamilton and Swansea
Norwich Brick & Tile Works ^{1, 2}	R.R.2, Norwich	Norwich
Ontario Reformatory ^{1, 2}	Mimico	Mimico
Ottawa Brick & Terra Cotta Co. Ltd. ^{1, 2}	Billings Bridge	Billings Bridge
Owen Sound Brick Co. Ltd. ³	928 Second Ave. E., Owen Sound	Owen Sound
Paxton Brick & Coal Co. Ltd. ⁴	70 Herrick Ave., St. Catharines	St. Catharines
Phippen & Son ¹	390 Dawes Rd., Toronto	East York
Seegmiller E. & E. Ltd. ¹	525 Wendell Ave., Kitchener	Kitchener
Sprout & Sprout ¹	R.R.4, Seaforth	Tuckersmith Tp.
Superior Brick & Tile Co. Ltd. ¹	426 Victoria Ave., Fort William	Paipoonge Tp.
Taylor Bros. ¹	Beaverton	Beaverton
Thomson, R. ¹	R.R.4, Atwood	Grey Tp.
Toronto Brick Co. Ltd. ^{1, 2}	897 Bay St., Toronto	Todmorden and Toronto
Wagstaff Brick & Tile Co. ¹	R.R.4, Lindsay	Lindsay
Wallace, R. & Son ¹	238 First Ave. E., North Bay	Widdfield Tp.
Winch, Stuart A. ¹	Paisley	Paisley
Wright, F. M. ¹	Comber	Tilbury W. Tp.
Wright Brick Co. ¹	Box 56 "H" Toronto	East York Tp.
MANITOBA:		
Alsip Brick, Tile & Lumber Co. Ltd. ¹	508 Portage Ave., Winnipeg	Portage la Prairie, White-mouth and Winnipeg
Leary, William A. ²	Leary's	Leary's
Marion Brick, Tile & Clay Products Ltd. ¹	Box 30, St. Boniface	Old Kildonan
Pembina Mountain Clays Ltd. ⁴	915 Paris Bldg., Winnipeg	Morden
SASKATCHEWAN:		
Bruno Clay Works Ltd. ¹	508 Portage Ave., Winnipeg	Bruno
Dominion Fire Brick & Clay Products Ltd. ¹	Box 99, Moose Jaw	Claybank
Saskatchewan Clay Products Corp. ¹	401 Westman Chambers, Regina	Estevan
ALBERTA:		
Acme Brick & Tile Co. ¹	125 Alberta Block, Edmonton	Cannell
Aetna Coals Ltd. ⁴	Wayne	Wayne
Alberta Clay Products Co. Ltd. ¹	Box 672, Medicine Hat	Medicine Hat
Grande Prairie Brick Yard ¹	Grande Prairie	Grande Prairie
Gunderson Brick & Coal Co. Ltd. ²	Redcliff	Redcliff
Kidd, Gordon L. ⁴	Box 230, Drumheller	Drumheller
Little, J. B. & Sons Ltd. ¹	9120, 100th Ave., Edmonton	Riverdale
Medicine Hat Brick & Tile Co. Ltd. ¹	Box 100, Medicine Hat	Medicine Hat
Redcliff Premier Brick Co. Ltd. ^{1, 2}	Redcliff	Redcliff
Redcliff Pressed Brick Co. Ltd. ^{1, 2}	Redcliff	Redcliff
BRITISH COLUMBIA:		
Baker Brick & Tile Co. Ltd. ¹	3191 Douglas St., Victoria	Victoria
Bazan Bay Brick & Tile Co. ¹	Saanichton	Bazan Bay
Burrard Brick & Tile Co. ^{1, 2}	Port Moody	Port Moody
Clayburn Co. Ltd. ^{1, 2}	850 West Hastings St., Vancouver	Kilgard
Coast Clay Products ¹	Pleasantside	Port Moody
Cowichan Metallic Brick Ltd. ²	Hillbank	Hillbank
Evans, Coleman & Evans Ltd. ²	902 Columbia St., Vancouver	Gabriola Island
Fairey & Co. ¹	661 Taylor St., Vancouver	Vancouver
Love's Bricks Ltd. ¹	Grand Forks	Grand Forks
Port Haney Brick Co. Ltd. ¹	846 Howe St., Vancouver	Haney
Ray-Vite Laboratories Ltd. ³	138 West First Ave., Vancouver	Namu
Richmond, G. W. & Co. ²	2890 - 12th Ave. E., Vancouver	Kilgard

1. Clay used. 2. Shale used. 3. Idle, 1948 4. Produce bentonite,

Stoneware and Pottery

Name	Head office address	Location of plant
NEW BRUNSWICK:		
Canuck Pottery ¹	Box 116, Saint John	Little River
Deichmann, K. ¹	Moss Glen	Moss Glen
QUEBEC:		
Laurentian Art Pottery Inc. ²	St. Jerome	St. Jerome
Poterie de Saguenay, La. ²	Chicoutimi	Chicoutimi
Syndicat Ceramistes de la Beauce ¹	St. Joseph de Beauce	St. Joseph de Beauce
ONTARIO:		
Foster Pottery Co. ¹	Main St. W., Hamilton	Hamilton
ALBERTA:		
Medalta Potteries Ltd. ¹	Industrial Ave., Medicine Hat	Medicine Hat
Medicine Hat Potteries Ltd. ¹	Bridge & Clay Sts., Medicine Hat	Medicine Hat

1. Clay used. 2. Idle.

The Imported-Clay Products Industry

Name of Firm	Address
QUEBEC:	
Canada Firebrick Company Limited	4741 St. Ambroise St., Montreal
Canadian Potteries Limited.....	5 Blvd. du Séminaire, St. Johns
Elsterman Quebec Art Pottery.....	22 Leblanc St., Ste. Agathe des Monts
Laurentian Art Pottery Inc.	Ave. de la Poterie, St. Jérôme
Standard Clay Products	St. Johns
Vandesca Pottery Ltd.	405 Salaberry St., Joliette
Walker-Hind-Sutherland and Refractories Ltd.	309 St. Ferdinand St., Montreal
ONTARIO:	
Ball, R. N.	456 Joint St., Woodstock
Canadian Ohio Brass Company Limited.....	Thorold Rd., Niagara Falls
Canadian Porcelain Company Limited.....	Paradise Rd., Hamilton
Canada Vitriified Products Limited	Talbot St. E., St. Thomas
Iva Crumback China	53 Perry St., Woodstock
Dominion Potteries.....	Dundas St. N., Oakville
Donvale Pottery Company	27 Davies Ave., Toronto
Electro Porcelain Limited.....	2 Stewart St., Kitchener
Ecanada Art Pottery	206 Dundurn St. S., Hamilton
Frontenac Floor & Wall Tile Co. Limited	Kingston
Georgetown Clay Products Limited.....	King St., Georgetown
Green, A. P., Fire Brick Co. Ltd.	234 Rosemount Ave. (Weston), Toronto
Haines Ceramics Ltd.	94-100 Woodworth Ave., St. Thomas
Hamilton Porcelains Limited	38 Elgin St., Brantford
Humberside Potteries Ltd.	4160 Dundas St. W., Toronto
Industrial Ceramics Ltd.	Cooksville
Lincoln Pottery Limited	Central Ave., Beamsville
McMaster Pottery	Main St., Dundas
National Refractories Limited.....	Port Robinson
Peterboro Art Pottery.....	Water St. N., Peterborough
Petrik, John, Limited.....	290 Dundas St., Woodstock
Piblico Jointless Firebrick Ltd.	Homer Ave., Toronto
Robinson Clay Product Co. of Canada Ltd.	119 Shaftesbury Ave., Toronto
Royal Canadian Art Pottery.....	Kenilworth Ave., Hamilton
Sovereign Potteries Limited.....	282 Sherman Ave. N., Hamilton
York China and Artware Co. Ltd.	615 Spadina Ave., Toronto
MANITOBA:	
Steinbach Pottery	Steinbach
ALBERTA:	
Medalta Potteries Limited.....	Industrial Ave., Medicine Hat
National Porcelain Limited	Medicine Hat
BRITISH COLUMBIA:	
Allen Refractories	65-E - 1st Ave., Vancouver
Lambert Potteries	4316 Fraser Ave., Vancouver

The Lime Industry

1. Use dolomitic or brucitic limestone.
2. Use Newfoundland limestone.
3. Inactive.
4. Use calcium or high calcium limestone.
5. Kind of limestone not reported.
6. Purchase lime.

Name of Firm	Head Office Address	Location of Plant
NOVA SCOTIA:		
Dominion Steel & Coal Corp. Ltd. ^{1, 2}	Sydney.....	Sydney
Eastern Lime Co. Ltd. ³	Windsor.....	Windsor
NEW BRUNSWICK:		
Bathurst Power & Paper Co. Ltd. ⁴	Bathurst.....	Bathurst
Purdy & Green Ltd. ⁴	204 Metcalfe St., Saint John	Saint John
Snowflake Lime Ltd. ⁴	3 Pokiok Road, Saint John	Saint John
QUEBEC:		
Aluminum Company of Canada Ltd. ¹	1700 Sun Life Bldg., Montreal.....	Wakerfield
Arnaud, Mme. Edwilda ²	Joliette.....	Joliette
Belanger, Joseph ²	37 Rang St. Michel, Beaufort.....	Beaufort
Bousquet, Adrien ⁴	St. Dominique de Bagot	St. Dominique
Carrière Trois-Rivières Ltée ⁴	St. Louis de France	St. Louis de France
Cote, Joseph ⁴	Metabetchouan.....	Metabetchouan
Nation Lime Ltd. ⁴	Lime Ridge	Lime Ridge
Dontigny, R. & A. ⁴	Ste. Thécie	Ste. Thécie
Laurentian Stone Co. Ltd. ³	195 Nicholas St., Ottawa, Ont.	Hull
Limoges, Henri ⁴	552 Poupart St., Montreal.....	St. Michel
Mercure, Camille ⁴	555 - 16th Ave., St. Hyacinthe	St. Dominique
Shawinigan Chemicals Ltd.	690 Dorchester St. W., Montreal.....	Shawinigan Falls
Standard Lime Co. Ltd. ⁴	St. Paul de Joliette	St. Paul de Joliette, St.
Trottier, David ⁵	St. Marc des Carrières.....	Marc des Carrières
		St. Marc des Carrières

The Lime Industry — Concluded

Name of Firm	Head Office Address	Location of Plant
ONTARIO:		
Brunner Mond Canada Ltd. ⁴	Canadian Bank of Commerce Bldg., Toronto	Anderson Tp.
Canada & Dominion Sugar Co. Ltd.	Chatham	Chatham and Wallaceburg
Canadian Gypsum Co. Ltd.	170 Bloor St. W., Toronto	Guelph Tp.
Carleton Lime Products Co.	Box 26, Carleton Place	Carleton Place
Chemical Lime Ltd. ⁴	Beachville	Beachville
Gypsum, Lime & Alabastine Canada Ltd. ^{1, 4}	Paris	Beachville, Glen Christie and Milton
Jamieson Lime Co. ⁴	110 Hall St., Renfrew	Horton Tp.
Morris, Stanley ²	Delta	Delta
North American Cyanamid Ltd. ⁴	Niagara Falls	Niagara Falls
Rockwood Lime Co. ¹	Rockwood	Rockwood
Shane Lime & Charcoal Co. Ltd.	Eganville	Grattan Tp.
MANITOBA:		
Building Products & Coal Co. Ltd. ¹	111 Christie St., Winnipeg	Inwood
Gypsum, Lime & Alabastine Canada Ltd. ⁴	Paris, Ontario	Various
Manitoba Sugar Co. Ltd. ⁴	Fort Garry	Fort Garry
Winnipeg Supply & Fuel Co. Ltd. ^{1, 4}	812 Boyd Bldg., Winnipeg	Moosehorn and Stonewall
ALBERTA:		
Canadian Sugar Factories Ltd. ⁴	Raymond	Raymond and Picture Butte
Erico, M. ⁴	Cadomin	Cadomin
Loder's Lime Co. Ltd. ¹	Kananaskis	Kananaskis
Summit Lime Works Ltd. ⁴	Box 273, Lethbridge	Lethbridge
BRITISH COLUMBIA:		
Pacific Lime Co. Ltd. ⁴	744 W. Hastings St., Vancouver	Tetxaaa Island
Pacific Mills Ltd. ⁴	Campbell Ave., Vancouver	Ocean Falls

The Sand and Gravel Industry

In addition to the names listed below, production has been reported by the railway companies for ballast, and also a considerable amount by counties and townships in Ontario for road use.

Name of Firm	Head Office Address	Location
NOVA SCOTIA:		
Crockett, V. B.	Wallace	Belmont
Nova Scotia Department of Highways	Halifax	Various
Rayner Construction Ltd.	29 Commercial Road, Leaside, Ontario	Dobert
Warren Bituminous Paving Co. Ltd. ¹	1454 Bloor St. W., Toronto, Ontario	Portage and Iona
NEW BRUNSWICK:		
Likely, Jos. A. Ltd.	Saint John	East Saint John
Maxwell, Elmer	St. Stephen	Charlotte County
New Brunswick Department of Highways	Fredericton	Various
QUEBEC:		
Beaury, Antoine	Lachenaie	Mascouche
Bellefleur Quebec Mines Ltd.	Bellefleur	Guillet Tp.
Bonner Sand & Ballast Ltd. ¹	1434 St. Catherine St. W., Montreal	South Durham
Breen, Mary Ann	Guigues	Guigues
Brouillet Sand & Gravel Co. Ltd. ¹	Rawdon	Ste. Julieanne
Chabot & Vincellette	St. Jean Baptiste	St. Jean Baptiste
Coaticook, City of	Coaticook	Coaticook
Compagnie de Sable Ltée, La ¹	20 31ème Ave., Quebec	Beauport Est
Consolidated Oka Sand & Gravel Co. Ltd. ¹	248 McCord St., Montreal	Lake of Two Mountains
East Malaric Mines Ltd.	Norrie	Fournier Tp.
Gagnon, Arthur	1740 41ème rue, Grand'Mère	Grand'Mère
Goyer, Edouard & Frère	St. Bruno	St. Hilaire and St. Bruno
Hains, A. Ltée	837 ave. Royale, Beauport	Ste. Thérèse de Lisieux
Hydro-Electric Power Commission of Ontario	620 University Ave., Toronto, Ontario	Pontiac
Laberge, E.	Ste. Foy	Ste. Foy
Latulippe, P. ¹	240 rue de la Ronde, Quebec	St. Charles River
Magog, City of	Magog	Magog
Malaric Gold Fields Ltd.	355 St. James St. W., Montreal	Abitibi
Marchand & Frère	305 6th rue, Alma-ville-en-haut	Mont Carmel
Mercure, Camille	555 rue St. Denis, St. Hyacinthe	St. Dominique
Montreal Dual Mixed Concrete Ltd. ¹	6301 Park Ave., Montreal	Charette
Nonmetal Mining Corporation Ltd.	350 Bay St., Toronto, Ontario	Abitibi
O'Brien Gold Mines Ltd.	Kewagama	Cadillac Tp.
Pic Construction Co. Ltée	Arvida	Arvida
Poirier, Maurice	St. Félix de Valois	Notre Dame de Lourdes
Rimouski, City of	Rimouski	Notre Dame de Sacré Coeur
Robert & Dufour Engg.	329 ave. Royale, Beauport	Ste. Thérèse
Robertson, Angus, Ltd.	5035 Western Ave., Montreal	Pontiac
St. Andrew East Sand & Gravel	St. André	St. André
St. Francis River Dredging Co. ¹	St. François du Lac	St. Francis River
St. Hilaire, N.	New Liverpool	Chaudière Bassin
Sables des Mille Îles Ltée, La	19 rue Dupont, Montreal	St. Henri de Mascouche
Sherbrooke, City of	Sherbrooke	Orford Tp.

L. Markets washed or screened material

The Sand and Gravel Industry — Continued

Name of Firm	Head Office Address	Location
QUEBEC — Concluded:		
Standard Lime Co. Ltd. ¹	Joliette	Ste. Emelie
Tremblay, J. Albert	221 rue St. Famille, Kenogami	Simard Tp.
Two Mountains Sand Co. Ltd.	517 Canada Cement Bldg., Montreal	Pointe Calumet
Venne, Oscar	Lachenaie	Lachenaie
ONTARIO:		
Armstrong Bros. Construction ¹	75 Main St. N., Brampton	Chingacousy Tp.
Axford, K. R.	35 Elm St., St. Thomas	Yarmouth Tp.
Baker, Delbert	Gormley	Wilcox Lake
Barnes, Wm. R., Co. Ltd.	243 Cumberland Ave., Hamilton	Hamilton
Black, Chalmers	Kettieby	King Tp.
Blair, Milton	Arnprior	Carleton Co.
Blake, John	43 Leslie St., Toronto	Scarboro Tp.
Brasas Bros.	Niagara Falls	Stamford Tp.
Brantford, City of	Brantford	Brantford
Brennan Paving Co.	Hamilton	Usborne Tp.
Burnside, Chas.	1009 Wellington St., Ottawa	Bells' Corners
Burrows, J. W.	647 Lavery St., North Bay	Widdifield Tp.
Cadwell Marine Ltd. ¹	602 Erie Ave., Niagara Falls	Niagara Bar
Camelot Beach & Reeb's Bay Property Owners Association ¹	Welland	Welland
Caswell Construction Ltd. ¹	Kirkland Lake	Rarder Lake
Chatham Sand & Gravel Co. ¹	199 Stanley Ave., Chatham	Thames River
Coleman, Munro Ltd.	628 Pitt St., Cornwall	Moulinette
Consolidated Sand & Gravel Ltd. ¹	402 Harbour Commission Bldg., Toronto	Fuller, Paris and Waterford
Cooke, J., Ltd.	Aldershot	East Flamboro Tp.
Cooper, Alf. & Co.	12 North May St., Fort William	Paipoonge Tp.
Curran & Briggs Ltd. ¹	61 Dundas Square, Toronto	various
Dixie Sand & Gravel Ltd. ¹	21 Dundas Square, Toronto	Dixie
Dome Mines Ltd.	South Porcupine	Shaw Tp.
Dunn, Mrs. R.	R.R. 7, Woodstock	East Zorra Tp.
Durham Crushed Stone Ltd. ¹	Durham	Grey County
Eastern Sand & Gravel Co. ¹	101 North Park St., Brantford	Brantford
Ellis Bros.	65 Indian Trail, Toronto	Dixie
Elliott, Jack ¹	304 Scarlett Rd., Toronto	Etiobicoke Tp.
Forwell Sand & Gravel Ltd. ¹	Kapuskasing	Kapuskasing
Foster, R. R.	31 Whitney Place, Kitchener	Waterloo Tp.
Foy, G.	86 Spadina Ave., Ottawa	Bowesville
Gagnon Sand & Gravel Ltd. ¹	R.R. 2, Wardsville	Mosa Tp.
Gauthier, J. T.	R.R. 2, Cornwall	Cornwall
Goodreau, Charles, Estate ¹	Porcupine	Whitney Tp.
Grandmaitre, D.	R.R. 3, Northwood	Harwich Tp.
Greenwood Construction ¹	131 Montreal Rd., Eastview	McKays Lake
Guelph Sand & Gravel Ltd. ¹	Grand Valley	Grand Valley
Halliburton, John, Estate	Inkerman St., Guelph	Guelph Tp.
Harvey, John	101 Strange St., Guelph	Guelph
Hawkins, Wm.	Arnprior	Arnprior
Highland Creek Sand & Gravel Ltd. ¹	Stevensville	Ridgeway
Hince Concrete Products Ltd.	Highland Creek	Scarboro Tp.
Hollinger Consolidated Gold Mines Ltd.	Pickton	Pickton
Howard Sand & Gravel Co. Ltd. ¹	Timmins	Tisdale Tp.
Industrial Sand & Gravel Co. ¹	Aldershot	East Flamboro Tp.
Jenkins, Jack	67 Gilmour Ave., Toronto	Brampton
Jerome, A. P. ¹	Morpeth	Morpeth
Kettle, Mrs. Wm.	Main St., Bothwell	Bothwell
Kingston Sand & Gravel	Petrolia	Petrolia
Lake Erie Gravel Co.	235 Wellington St., Kingston	Kingston
Langdon Manufacturing Co.	Merlin	Tilbury East
Lyons, C. A. ¹	33 Brunswick St., Stratford	Downie
Maine, Jack ¹	R.R. 1, Paris	S. Dumfries Tp.
Martin & Dayman	R.R. 5, Chatham	Chatham
McGregor, N., & Son	Drumbo	Blenheim
McLean, A. B., & Sons Ltd. ¹	85 Nelson St., Brantford	Brantford
McNamara Construction Co. Ltd. ¹	Sault Ste. Marie	St. Marys River
National Sand & Material Co. Ltd. ¹	42 Industrial St., Leaside	Gauthier, Coleman, Bowman Plummer Tps.
Northern Sand & Gravel Co.	402 Harbour Bldg., Toronto	Lake Ontario
Ontario Sand & Gravel Co. Ltd. ¹	177 Eyre St., Sudbury	Neelon Tp.
Park Bros.	1211 Bathurst St., Toronto	Maple
Peninsula Sand Co.	Lucan	Lucan
Pioneer Construction Co. Ltd. ¹	Stamford Centre	Stamford Tp.
Quigley Construction Co.	Sudbury	Sudbury
Richardson, J. E. ¹	Bartonville	Waterdown
Sarjeant Co. Ltd.	Thamesville	Thames River
Shelton, R.	2 Mary St., Barrie	Barrie
Sherk Construction	Ingersoll	Dereham Tp.
Sherman Sand & Gravel	Sherkston	Sherkston
Smythe, C., Ltd. ¹	Port Credit	Port Credit
Speilant, G. A.	Box 8, Postal Station D, Toronto	Mount Dennis
Spinks & Fox Sand & Gravel Co.	Brussels	Grey Tp.
Spratt, G. H. ¹	Leamington	Leamington
Stapledon, W. H., & Son	Billings Bridge	Billings Bridge
Stouffville Sand & Gravel Ltd. ¹	Britannia Heights	Britannia Heights
Superior Sand, Gravel & Supplies Ltd. ¹	Stouffville	Stouffville
Towland Construction Co. Ltd.	347 Bay St., Toronto	Vaughan Tp.
United Towing & Salvage Co. Ltd. ¹	294 Dundas St., London	Wyton
Woollatt Fuel & Supply Co. Ltd. ¹	635 Common St., Montreal, Quebec	Lake Superior
Yundt, Wm.	2171 Ottawa St., Windsor	Leamington
	187 Cobourg St., Stratford	Ellice Tp.

1. Markets washed or screened material.

The Sand and Gravel Industry — Concluded

Name of Firm	Head Office Address	Location
MANITOBA:		
Alsip Brick, Tile & Lumber Co. Ltd. ¹	508 Portage Ave., Winnipeg	Beausejour
Brandon, City of	Brandon	Brandon
Building Products & Coal Co. Ltd.	111 Christie St., Winnipeg	Birds Hill
Cumming & Dobbie	233 Ninth St., Brandon	Brandon
Greater Winnipeg Water District	185 King St., Winnipeg	Winnipeg
Manitoba Department of Highways	Winnipeg	various
McCurdy Supply Co. Ltd.	Sargent & Erin Sts., Winnipeg	Winnipeg
Provincial Gravel & Coal Co. Ltd. ¹	356 Main St., Winnipeg	Springfield
Winnipeg, City of	223 James Ave., Winnipeg	Birds Hill
SASKATCHEWAN:		
Eamon, H. G., & Co.	Biggar	Biggar
Hudson Bay Mining & Smelting Co. Ltd.	500 Royal Bank Bldg., Winnipeg, Manitoba	Flin Flon
Klemmer & Whaley	Nipawin	Nipawin
Logan, Poster	Gull Lake	Gull Lake
McKay, Chas.	Garrick	Garrick
McLachlan Bros.	Flin Flon	Flin Flon
Reliance Services Ltd.	Regina	various
Saskatchewan Department of Highways	Torquay	Torquay
Schnell, Frank	43 Broadway, Yorkton	Yorkton
Wallace, Rural Municipality		
ALBERTA:		
Alberta Department of Highways	Edmonton	various
Doncaster Construction Co. Ltd. ¹	Garneau Theatre Bldg., Edmonton	Edmonton
Jefferies & Sons Ltd. ¹	Calgary	Calgary
Mountain View, Municipal District ¹	Didsbury	Didsbury
BRITISH COLUMBIA:		
Armstrong, City of	Armstrong	Armstrong
B.C. Electric Railway Co. Ltd.	425 Carrall St., Vancouver	various
British Columbia Department of Highways	Victoria	various
Chilliwack, City of	Chilliwack	Chilliwack
Colebrook Sand & Gravel Co.	Cloverdale	Cloverdale
Consolidated Mining & Smelting Co. of Canada Ltd.	Cranbrook	Kimberley and Tadianac
Cranbrook, City of	Cranbrook	Cranbrook
Deeks Sand & Gravel Co. ¹	1051 Main St., Vancouver	Seymour Creek
Delta, Corporation of	Delta St., Ladner	Ladner
Fernie, City of	Fernie	Fernie
Gilley Bros. Ltd. ¹	902 Columbia St., New Westminster	Port Coquitlam
Highland Sand & Gravel Co. Ltd. ¹	Lynn timer	Lynn timer
Hillside Sand & Gravel Ltd. ¹	Hillside	Hillside
Kamloops, City of	288 First Ave., Kamloops	Kamloops
McHattie, J. T.	Royal Oak P.O., Saanich	Saanich
McIntyre & Harding Gravel Co. Ltd. ¹	Royal Oak P.O., Saanich	Saanich
Nelson, City of	501 Front St., Nelson	Nelson
Pitkethly Bros. Ltd. ¹	8699 Angus Drive, Vancouver	Vancouver
Port Alberni, City of	Port Alberni	Port Alberni
Producers Sand & Gravel Co. (1929) Ltd. ¹	1902 Store St., Victoria	Royal Bay
Road Materials Ltd. ¹	8699 Hudson St., Vancouver	North Vancouver
Saanich, Corporation of	Royal Oak P.O., Saanich	Saanich
Taylor, E. R., Construction Co. Ltd.	8699 Hudson St., Vancouver	Burnaby

1. Markets washed or screened material.

The Stone Quarrying Industry

Granite

Name of Firm	Head Office Address	Location
NOVA SCOTIA:		
Bower, A. R. ¹	P.O. Box 255, Shelburne	Shelburne
Dauphinee, W. T.	P.O. Box 68, Shelburne	Birchtown
Nictaux Granite Canada Ltd. ²	P.O. Box 299, Middleton	Nictaux
Nixon Granite Works ²	R.R. 3, Middleton	Nictaux West
NEW BRUNSWICK:		
Granite Street Pavement & Construction Co.	P.O. Box 1137, Saint John	Hampstead
Milne Coutts & Co. Ltd. ²	St. George	St. George
QUEBEC:		
Adu Granite Inc. ²	P.O. Box 83, Montreal	Beebe
Anderson, James ²	P.O. Box 125, Beebe	Beebe
Bolduc, Antonio ²	St. Sebastien	St. Cecile
Brodies Ltd. ²	1070 Bleury St., Montreal	Granville, Guenette and Mount Johnson
Bussière & Frère Engr. ²	St. Sebastien	St. Sebastien
Canada Black Granite Co. Ltd. ¹	P.O. Box 550, Rouville	Beauchastel Tp.
Cloutier, R. L. ²	Beebe	Beebe
Delwade & Goffin Engr. ²	1365 St. Valier St., Quebec	St. Anne
Deschambault Quarry Corp. ²	56 St. Pierre St., Quebec	St. Gerard

1. Did not ship in 1948.

2. Firms operating dressing works in conjunction with quarry.

**The Stone Quarrying Industry — Continued
Granite — Concluded**

Name of Firm	Head Office Address	Location
QUEBEC — Concluded:		
Dumas & Voyer ²	Rivière à Pierre.....	Rivière à Pierre
Everlasting Granite Co. Ltd. (The) ²	Lac Mégantic.....	St. Samuel
Gaboriault & Nevers Reg'd. ²	P.O. Box 65, Grenville.....	Grenville
Gagnon, Arthur.....	1740 Fourth St., Grand'Mère.....	Grand'Mère
Gingras & Frère Ltée ²	Stanhope.....	Stanhope
Granite Products Ltd.....	1070 Bleury St., Montreal.....	Rigaud
Granit National Ltée., Le ²	St. Joseph d'Alma.....	St. Gedeon and St. Joseph d'Alma
Grenier, Elie.....	Glenada.....	Glenada
Haselton Granite Quarries ²	Beebe.....	Beebe
Héroux & Robert Ltée., ²	1414 Crescent St., Montreal.....	St. Samuel
Laforce, H. & Fils Emrg. ²	1327 St. Vallier St., Quebec.....	St. Anne
Lambert, Alcide.....	57A First St., Shawinigan Falls.....	St. Flore
Marvel Granite Reg'd.....	17 Notre Dame St., Donnacona.....	St. Raymond
Massicotte, L. & Carreau Ltée.....	5 Fusey St., Cap de la Madeleine.....	La Tuque
McNamara Construction Co. Ltd.....	42 Industrial St., Toronto, Ontario.....	Baie Comeau
Moroua, P. ²	Hebertville Station.....	Hebertville Station
Paré, Elzeir.....	Rivière à Pierre.....	Guenette
Perron, Arthur.....	Guenette.....	Rivière à Pierre
Poisson, M.....	Quebec.....	Various
Quebec Department of Roads.....	680 Sherbrooke St. W., Montreal.....	Baie Comeau
Quebec North Shore Paper Co.....	5035 Western Ave., Montreal.....	Lake Dozois
Robertson, Angus Ltd.....	636 Ave. Querbes, Outremont.....	St. Bruno
St. Bruno Quarry & Paving Co. Ltd.....	Guenette.....	Guenette
St. Pierre, J.....	St. Samuel Station.....	St. Samuel Station
St. Samuel Granite ²	Cap St. Martin.....	Cap St. Martin
Scotstown Granite Co. Ltd. ²	600 Dorchester St. W., Montreal.....	Shawinigan Falls
Shawinigan Engineering Co. Ltd.....	2251 rue Delorimier, Montreal.....	St. Samuel
Silver Granite Co. Ltd. ²	1043 Blvd. des Forges, Trois Rivières.....	St. Gerard
White Diamond Granite Co. Ltd.....		
ONTARIO:		
Building Products Ltd.....	P.O. Box 6063, Montreal, Quebec.....	Madoc
Canadian Dredge & Dock Co. Ltd.....	302 Harbour Commission Bldg., Toronto.....	Port Arthur
Hall, Wilfred.....	36 Burritt St., Parry Sound.....	Mill Lake
Horne, Wm., Granite Quarries.....	Butler via Ignace.....	Butler
Ontario Rock Co. Ltd.....	2 College St., Toronto.....	Belmont Tp.
Verona Rock Products Ltd.....	Verona.....	Verona
MANITOBA:		
Manitoba Department of Highways.....	Winnipeg.....	Various
Winnitoba Marble Co. Ltd. ²	1180 Wall St., Winnipeg.....	West Hawk Lake
BRITISH COLUMBIA:		
B. C. Monumental Works Ltd. ¹	3096 Main St., Vancouver.....	Granite Island
Canadian National Railways.....	Montreal, Quebec.....	Yale, Pitman, Copper Creek and Ashcroft
Coast Quarries Ltd.....	1840 West Georgia St., Vancouver.....	Granite Falls
Gilley Bros. Ltd.....	302 Columbia St., New Westminster.....	New Westminster
Horne, Wm., Granite Quarries.....	505 Front St., Nelson.....	Nelson
Nelson Granite & Monumental Co. ²	2890 - 12th Ave. E., Vancouver.....	Nelson
Richmond, G. W.....	1394 Pine Ave., Trail.....	Trail Falls
Trail, City of.....	Cheam-View.....	Trail
Valley Granite Products.....	744 Hastings St. W., Vancouver.....	New Westminster
Vancouver Granite Co. Ltd. ²	32 Coldstream Rd., Vernon.....	Nelson Island
Vernon Granite & Marble Co. ²	Sirdar.....	Vernon
Wilson, James S. & Co. Ltd. ²		Sirdar

1. Did not ship in 1948.

2. Firms operating dressing works in conjunction with quarry.

Limestone

Name of Firm	Head Office Address	Location
NOVA SCOTIA:		
Dillman Bros. ¹	Admiral Rock.....	Admiral Rock
Eastern Lime Distributors Ltd.....	Windsor.....	Windsor
Mersey Paper Co. Ltd.....	Liverpool.....	East River Point
Mosher Limestone Co. Ltd.....	Upper Musquodoboit.....	Upper Musquodoboit
Nairn, J. S.....	24 Whitney Ave., Sydney.....	Scotch Lake
Nova Scotia Department of Highways.....	Halifax.....	Various
Windsor Foundry ¹	O'Brien St., Windsor.....	Windsor
NEW BRUNSWICK:		
Brookville Manufacturing Co. Ltd.....	Brookville.....	Brookville
Elm Tree Limestone Co-Operative Ltd.....	Nigadoo.....	Nigadoo
Havelock Lime Works.....	Havelock.....	Havelock
Industrial Enterprises Inc.....	P.O. Box 910, Presque Isle, Maine, U.S.A.....	Randolph
Snowflake Lime Ltd.....	3 Pokiak Rd., Saint John.....	Saint John
QUEBEC:		
Aluminum Company of Canada Ltd.....	1700 Sun Life Bldg., Montreal.....	Arvida
Amendements Calcaires de Rivière Bleue Emrg. (Les).....	Rivière Bleue.....	Rivière Bleue
Beaudry, Joseph P.....	133 Tache St., Joliette.....	Joliette
Beco Inc.....	Rimouski.....	Rimouski
Bedard, Jean Ltée.....	480 Lafleur Ave., La Salle.....	La Salle
Boucher, Louis.....	Perce.....	Perce
Bourget, J. D.....	Deforceville.....	Deforceville

1. Did not ship in 1948.

2. Firms operating dressing works in conjunction with quarry.

The Stone Quarrying Industry — Continued
Limestone — Continued

Name of Firm	Head Office Address	Location
QUEBEC — Concluded:		
Canada Cement Co. Ltd.	P.O. Box 290, Station "B", Montreal	Hull
Canadian Quarries Co.	2251 Chemin de la Cote, St. Michel	St. Michel
Carrière Andonco	Cap St. Martin	Cap St. Martin
Carrière Bernier Enrg.	R.R. 2, St. Jean	St. Jean
Carrière au Cap St. Martin Enrg.	636 Ave. Querbes, Outremont	Cap St. Martin
Carrière Corneau Enrg.	518 rue Mondor, St. Hyacinthe	St. Dominique
Carrière Gravel Ltée.	Chateau Richer	Chateau Richer
Carrière Pointe Claire	235 Montée St. Charles, Ste. Genevieve	Pointe Claire
Carrière de St. Barthelemi Ltée.	St. Barthelemi	St. Barthelemi
Carrières de St. Dominique Ltée (Les)	585 St. Denis, St. Hyacinthe	St. Dominique
Carrière St. Maurice Inc.	1497 Craig St., Trois Rivières	St. Louis de France
Carrière Trois Rivières Ltée.	St. Louis de France	St. Louis de France
Charbonneau, Lucien & Cie.	St. François de Sales	St. François de Sales
Charon & Fils	Belanger Village	Belanger Village
Cie de Construction de Roberval Ltée.	Roberval	Roberval
Departement de la Justice ¹	Ottawa, Ontario	St. Vincent de Paul
Deschambault Quarry Corp. ²	56 rue St. Pierre, Quebec	St. Marc des Carrières
Dominion Lime Ltd.	Lime Ridge	Lime Ridge
Fillon, Aldege	Lachute	Lachute
Fiset, Elidore	St. Marc des Carrières	St. Marc des Carrières
Fuger & Smith Ltd.	78 Victoria Ave., Pointe Claire	Pointe Claire
Gagnon & Leclerc	St. Joachim	St. Joachim
Gaspesian Fertilizer Reg'd.	Port Daniel East	Port Daniel East
Gauthier, Jos. O. Ltée. ²	St. Marc des Carrières	St. Marc des Carrières
Gingras & Frère Ltée. ²	St. Marc des Carrières	St. Marc des Carrières
Hargate Quarries Ltd.	Cap St. Martin	Cap St. Martin
Kennedy Construction Co. Ltd.	407 McGill St., Montreal	Actonville
Lagace Quarries Ltd.	130 Blvd. Labelle, L'Abord-à-Plouffe	L'Abord-à-Plouffe
Lasalle Quarry Ltd.	8413 Blvd. St. Michel, Montreal	Ville St. Michel
Laurentian Stone Co. Ltd.	195 Nicholas St., Ottawa, Ontario	Hull
Leclerc, J. J. & Fils, Ltée.	Drapeau	Drapeau
Martineau Cut Stone Co. Ltd. ²	5000 — 13ième Ave., Rosemont	Rosemont
Mercure, Camille	555 rue St. Denis, St. Hyacinthe	St. Dominique de Bagot
Miner, R. H., Co. Ltd.	Belanger Village	Belanger Village
Ministère de la Voirie	Quebec	St. Charles de Bellechasse
Montreal Cut Stone Ltd. ²	1869 rue St. Andre, Montreal	St. François de Sales
Montreal Quarry Ltd.	2020 Ave. Union, Montreal	St. Michel
National Quarries' Ltd.	6301 Park Ave., Montreal	Cote St. Michel
Quebec Department of Roads	Quebec	Various
Rioux, Raoul & Maurice	Cowansville	Cowansville
St. Francis Rock Products & Equipment Ltd.	Cote Ste. Marguerite, Montreal	St. Laurent
St. Laurent Stone Products & Supplies Ltd.	Cote Ste. Marguerite, Montreal	St. Laurent
St. Lawrence Construction Co.	936 Dominion Square Bldg., Montreal	Ste. Anne des Monts
St. Marc Lime Reg'd.	St. Marc des Carrières	St. Marc des Carrières
Salaberry de Valleyfield, La Cité.	Salaberry de Valleyfield	Salaberry de Valleyfield
Shawmigan Chemicals Ltd.	600 Dorchester St. W., Montreal	Bedford
Société Cooperative Agricole	St. Andre	St. Andre
Standard Lime Co. Ltd.	Joliette	St. Joseph de Lévis
Syndicat de Broyage de Lévis	St. Joseph de Lévis	St. Joseph de Lévis
Syndicat de Chaux	St. Godefroi	St. Godefroi
Tanguay, J.	Ste. Justine	Ste. Justine
Toussant, Paul	Charlesbourg East	Charlesbourg East
Trappe de N. D. de Mistassin, La	Village des Peres	Mistassin
Tremblay, L.P.	Matane	Matane
Tremblay, W.	16 rue Calixte, Ste. Anne	Ste. Anne
Tremblay, Wilfrid.	Baie St. Paul	Baie St. Paul
Union des Carrières & Pavages Ltée.	St. Michel	Charlesbourg
Varin, Joseph	3275 Cote St. Michel, Montreal	St. Michel
Verreault, Elzear Ltée.	194 du Pont, Quebec	Gifford
Viau, Paul	340 Blvd. du Havre, Valleyfield	Valleyfield
ONTARIO:		
Abitibi Power & Paper Co. Ltd.	408 University Ave., Toronto	Bucke Tp.
Bolender's Ltd.	Haliburton	Eagle Lake
Brunner Mond Canada Ltd.	Bank of Commerce Bldg., Toronto	Anderdon Tp.
Campbell, Jack Co. Ltd.	P.O. Box 592, Alliston	Stevensville
Canada Cement Co. Ltd.	P.O. Box 290, Station "B" Montreal, Quebec	Dundas and Hagersville
Canada Crushed Stone Ltd.	72 Sun Life Bldg., Hamilton	Ramsay Tp.
Carleton Lime Products Co.	P.O. Box 28, Carleton Place	Beachville
Chemical Lime Ltd.	P.O. Box 122, Beachville	Bonville
Cook, G.	628 Pitt St., Cornwall	Amabel Tp.
Cook, A. & Sons Ltd.	Warton	Saltfleet Tp.
Cope, A. & Sons Ltd.	19 Albert St., Hamilton	Bowesville
Dibblee Construction Co. Ltd.	248 Albert St., Ottawa	Bowesville
Frazer-Duntlie Co. Ltd.	130 Sparks St., Ottawa	Beachville and Hespeler
Gypsum, Lime & Alabastine Canada Ltd.	Paris	Hagersville
Hagersville Quarries Ltd.	2700 Dufferin St., Toronto	Hagersville
Haldimand Quarries & Construction Ltd.	137 Wellington St. W., Toronto	Horton Tp.
Jameson Lime Co.	110 Hall Ave., Renfrew	Kirkfield
Kirkfield Crushed Stone Ltd.	2700 Dufferin St., Toronto	Port Colborne
Law, R. E., Crushed Stone Ltd.	Port Colborne	Nearby Tp.
Limestone Products Ltd.	1109 Millwood Rd., Toronto	Robertsburg
Marhill Mines Ltd.	Thorold	Saltfleet Tp.
McNally's Stone Quarry	Rosseau Rd., Bartonville	Ingersoll
North American Cyanamid Ltd.	Niagara Falls	Aired
Parisien, Fernand	Aired	Pembroke
Pembroke, Corporation of	Pembroke	Pembroke

1. Did not ship in 1948.

2. Firms operating dressing works in conjunction with quarry.

The Stone Quarrying Industry— Continued
Limestone — Concluded

Name of Firm	Head Office Address	Location
ONTARIO — Concluded:		
Queenston Quarries Ltd. ²	72 Sun Life Bldg., Hamilton	Niagara Falls
Rieger Bros. Construction Ltd.	Scudder P.O.	Pelee Island
Savigny Bros.	P.O. Box 143, Merriton	Grantham Tp.
Verone Rock Products Ltd.	66 King St. W., Toronto	Verona
Walker Bros.	P.O. Box 586, Thorold	Stamford Tp.
Wehman, John	578 Division St., Kingston	Kingston Tp.
Welland Crushed Stone & Building Co. Ltd. ¹	R.R. 2, McLeod Rd., Niagara Falls	Stamford Tp.
MANITOBA:		
Building Products & Coal Co. Ltd.	111 Christie St., Winnipeg	Inwood
Garson Limestone Co.	251 Machray Ave., Winnipeg	Garson
Manitoba Department of Highways	Winnipeg	Various
Tyndall Quarry Co. Ltd. ²	1591 Erin St., Winnipeg	Tyndall
Winnipeg, City of	225 James Ave., Winnipeg	Stony Mountain
Winnipeg Supply & Fuel Co. Ltd.	812 Boyd Bldg., Winnipeg	Moosehorn and Stonewall
ALBERTA:		
Errico, Mike	Cadomin	Cadomin
Loder's Lime Co. Ltd.	Kananaskis, Exshaw P.O.	Kananaskis
Summit Lime Works Ltd.	P.O. Box 273, Lethbridge	Lethbridge
BRITISH COLUMBIA:		
Agassiz Lime Quarry	P.O. Box 187, Agassiz	Agassiz
B. C. Department of Highways	Victoria	Various
B. C. Marl Co. Ltd.	525 Seymour St., Vancouver	Princeton
Beale, Stanley	Van Anda	Van Anda
Beale Quarries Ltd.	744 West Hastings St., Vancouver	Van Anda
Capilano Crushing Co. Ltd.	107 East First Ave., Vancouver	West Vancouver
Consolidated Mining & Smelting Co. Of Canada Ltd.	Trail	Fife
Knox, Beale Ltd.	2546 Granville St., Vancouver	Port Alice
Koeye Limestone Co.	Namu	Koeye River
Marlime Ltd.	50 Sixth St., New Westminster	Solsqua
Martinson & McKay	Jeune Landing	Jeune Landing
Munro, W. A.	Bridal Falls	Bridal Falls
Okanagan Lime & Exploration Co. Ltd.	Okanagan Falls	Okanagan Falls
Pacific Lime Co. Ltd.	744 W. Hastings St., Vancouver	Blubber Bay

Marble

QUEBEC:		
Canadian Dolomite Co.	Portage du Fort	Portage du Fort
Carrière Ste. Thécle Quarry	Ste Thécle	Ste. Thécle
Industrial Fillers Ltd.	4820 - 4th Ave., Montreal	St. Armand
Missisquoi Stone & Marble Co. Ltd. ²	Philipsburg	Philipsburg
Orford Marble Co. Ltd.	65 Beaudet St., St. Laurent	St. Laurent
ONTARIO:		
Bonter, W. F. & Co. Ltd.	Malone	Malone
Bonter Marble & Calcium Co. Ltd.	P.O. Box 61, Marmora	Marmora
Silvertone Black Marble Quarries Ltd.	305 O'Connor St., Ottawa	St. Albert
Stockloser Barble Quarries	P.O. Box 208, Madoc	Madoc
BRITISH COLUMBIA:		
Marble & Associated Products	507 Ellice St., Vancouver	Malahat

Sandstone

NOVA SCOTIA:		
Arsenault Monumental Works ²	Antigonish	North Grant
Canadian Dredge & Dock Co. Ltd.	302 Harbour Commission Bldg., Toronto, Ontario	Wallace
Municipal Spraying & Construction Ltd.	1350 Barrington St., Halifax	Wallace
Nova Scotia Department of Highways	Halifax	Various
NEW BRUNSWICK:		
Smith, E. A.	Shediac	Shediac
QUEBEC:		
Blais, Joseph Enrg	32 Ave. Mont-Marie, Lévis	St. Romuald
Gagnon, L. P.	7 Avenue Gagnon, Lévis	St. David de Lévis

1. Did not ship in 1948.

2. Firms operating dressing works in conjunction with quarry.

The Stone Quarrying Industry — Concluded
Sandstone — Concluded

Name of Firm	Head Office Address	Location
QUEBEC — Concluded:		
Grant Mills Ltd.	5314 York St., Montreal.....	Grande Rivière
Peel Construction Co. Ltd.	75 Main St., Brampton, Ontario.....	Trois Pistoles
Poirier, W.	Montebello	Montebello
Quebec Department of Roads.....	Quebec	Various
Rousseau, T. E.	Val Brilliant	New Carlisle
Russell, J. G.	Cap Chat.....	Cap Chat
Sherbrooke, City of	Sherbrooke.....	Sherbrooke
Simard, Adjuitor.....	Pointe-au-Pic.....	Pointe-au-Pic
ONTARIO:		
Barnes, Wm. R., Co. Ltd.	243 Cumberland Ave., Hamilton.....	Inglewood
Campbell Sandstone Quarries Ltd., ²	155 Ruskin St., Ottawa.....	Bell's Corners
Caylovic, J.	Georgetown	Inglewood
Corner, Austin	Belfountain	Belfountain
Martin, E.	Glen Williams.....	Glen Williams
McHarg, B.	Georgetown	Georgetown
Mitchell, W.	Limehouse	Credit Valley
Mountain Sandstone Quarry	Georgetown.....	Inglewood
Rice, Joseph	Georgetown.....	Georgetown
Shelbourne & Norrie	Georgetown.....	Glen Williams
Sykes Quarries.....	Georgetown.....	
BRITISH COLUMBIA:		
Canadian Pacific Railway Co.....	Montreal, Quebec	Revelstoke
Consolidated Mining & Smelting Co. of Canada Ltd.....	Trall	Kimberley

Slate

QUEBEC:		
Bombardier, J.	Kingsbury.....	Kingsbury
BRITISH COLUMBIA:		
Brown, O. M.	1903 Lansdowne Rd., Victoria	Leachtown
Richmond, Geo. W. & Co.	2890 - 12th Ave. E., Vancouver ²	McNab Creek

1. Did not ship in 1948.

2. Firms operating dressing works in conjunction with quarry.

Diamond Drilling Contractors

Name of Firm	Head Office Address
Allard Bros.	1120 2nd Ave., Val d'Or, Quebec
Albert, E.	Dubouison Quebec
Anderson, Anton.....	20 Patricia Blvd., Timmins, Ontario
Andercheck, John M.	61 Third Ave., Timmins, Ontario
Arno Diamond Drilling Co. Ltd.	106 Laidlaw St., Timmins, Ontario
Baderski, Frank & Son.....	464 Algonquin Blvd. E., Timmins, Ontario
Baker, L. J.	Box 520, Val d'Or, Quebec
Berube Diamond Drilling Reg'd.	Box 2021, Val d'Or, Quebec
Blodeau, Chartrand, Girard.....	Val d'Or, Quebec
Boyles Bros. Drilling (Alberta) Ltd.	6123 129 th Ave., Edmonton, Alberta
Boyles Bros. Drilling Co. Ltd.	1291 Parker St., Vancouver, British Columbia
Bourgeois, Larry	57 Laurier St., Bourlamaque, Quebec
Burton, Archie S.	352 Howey Crescent, Sudbury, Ontario
Bradville Drilling & Exploration Ltd.....	12 Government Rd. W., Kirkland Lake, Ontario
Canadian Longyear Ltd.	Box 399, North Bay, Ontario
Chenette Drilling.....	Coleraine, Quebec
Connors, T., Diamond Drilling Co. Ltd.	744 West Hastings St., Vancouver, British Columbia
Continental Diamond Drilling Co. Ltd.	82 Perreault St. W., Rouyn, Quebec
Cerberian Mineral Explorers Ltd.	Box 369, Noranda, Quebec
Demorest Drilling Ltd.	188 4th Ave., Noranda, Quebec
Eco Exploration Co. Ltd.	705 Childs Building, Winnipeg, Manitoba
Geraldton Diamond Drilling Co.	Geraldton, Ontario
Groleau Bros.	40 Taschereau E., Rouyn, Quebec
Grodin, M.	Box 2013, Val d'Or, Quebec
Golden Diamond Drilling Co.	Box 703, Kirkland Lake, Ontario
Heath & Sherwood	6 Duncan Ave., Kirkland Lake, Ontario
Hinton, A. H. Drilling Co. Ltd.	Red Lake, Ontario
Inspiration Mining & Development Co. Ltd.	184 Bay St., Toronto, Ontario
Jones & Bradley Ltd.	Drawer 1050, Noranda, Quebec
Kirk, J. B.	845 Beamish Ave., Geraldton, Ontario
Kuntz, H. J.	Box 300, Malartic, Quebec
Labine Bros.	McKenzie Island, Quebec
LaRocque, T. E.	10 Frontenac St., Val d'Or, Quebec
Lipasti, E.	Larder Lake, Ontario
Mikelait, J. A.	Box 127, Rouyn, Quebec
Morissette Diamond Drilling Ltd.	Box 440, Haileybury, Ontario
McCall Diamond Drilling Co.	Box B, Geraldton, Ontario
Midwest Diamond Drilling Co. Ltd.	Flin Flon, Manitoba

Diamond Drilling Contractors — Concluded

Name of Firm	Head Office Address
McGinn, J. R.	5 Elgin St., Sudbury, Ontario
McIsaac Drilling, R. M.	35 Church St., Flin Flon, Manitoba
National Diamond Drilling Co. Ltd.	Box 508, Rossland, British Columbia
Pacific Diamond Drilling Co. Ltd.	260 Industrial Ave., Vancouver, British Columbia
Patricia Diamond Drilling Co. Ltd.	McKenzie Island, Ontario
Pearson, A. H.	369 7th Ave., Noranda, Quebec
Robinson Contracting Co. Ltd.	804-850 Hastings St. W., Vancouver, British Columbia
Rowan, Angus	119 Elm St. N., Timmins, Ontario
Smith & Travers Co. Ltd.	208 Walnut St., Sudbury, Ontario
Subterra Exploration Co. Ltd.	175 Main St. E., North Bay, Ontario
Territories Exploration & Drilling	Box 149, Yellowknife, Northwest Territories
Thompson Drilling & Mining Development Co. Ltd.	4 North Ave., Flin Flon, Manitoba
Timmins Diamond Drilling Development Co. Ltd.	174 Maple St. N., Timmins, Ontario
Traynor Diamond Drilling Co. Ltd.	15 Toronto St., Toronto, Ontario
Tremblay, Paul E.	Rouyn, Quebec
Wilson, A.	16 B Ave., Noranda, Quebec

Fuel Well Drilling Contractors

Name of Firm	Head Office Address
NOVA SCOTIA:	
Kennedy, O. V.	Bridgetown
ONTARIO:	
Ashton, J. L.	550 King St. W., Chatham
Carter & Kidd	Box 51, Wallaceburg
Culver, Marvin, & Son	R.R. 2, Selkirk
Culver & Havill	Stevensville
Davidson, Fred L.	Wingham
Demaray, C.	Kerwood
Dennis, G.	R.R. 2, Selkirk
Dolphin Bros.	Saulsbury St., Strathroy
Dominion Petroleum Co. Ltd.	Glencoe
Donald, T. G.	Hagersville
Emerson, H. L.	R.R. 1, Dunnville
Emerson & Rose	Wainfleet
Evans, Harry	Tillsonburg
Garringer, W.	Dunnville
Harris, W.	Welland
Heal, A. A.	Box 264, Watford
Held, Karl F.	R.R. 2, Fisherville
Holmes, D. A.	Petrolia
Holmes, E. R.	Bothwell
Hodgson, Roy	Cayuga
Hoover, A. E., Estate	Selkirk
Houss, C. C.	Stevensville
Hussey, W. J.	Petrolia
Irving, D.	64 Culver St., Simcoe
Jackson, P. L.	211 George St., Dunnville
Kiser Bros.	5 South St., Chatham
Lymburner Bros. & Webber	Dunnville
Lyons, S., & Son	R.R. 5, Simcoe
Mandle, R.	Dunnville
McCutcheon, T. O.	225 Broad St., Dunnville
McKillop, Wm., & Son	Box 102, Hamilton
McLister, J. J.	Dunnville
McMaster, Robt.	Box 655, Caledonia
Nagel, Elmer	Stevensville
Nauman, J. R.	Fisherville
Patterson & Culver	Box 93, Dunnville
Patterson Gas Co. Ltd.	Jamestown, New York, U.S.A.
Renwick, S.	Bright
Roth, H.	R.R. 9, Dunnville
Shank Bros.	R.R. 2, Selkirk
Stewart, E.	R.R. 3, Jarvis
Stubble, H. H., & Son	225 Grand Ave. E., Chatham
Stubble & Stubble	Merlin
Swayze, Roy	Selkirk
Etnde & Meier	Thamesville
Warren, G.	R.R. 1, Canboro
Werner, D. E.	Fisherville
Wilson-Sullivan Development Co.	112 S. Christina St., Sarnia
Windover, Wm.	R.R. 2, Sarnia
MANITOBA:	
Coyle, D. J.	796 McDermot Ave., Winnipeg
SASKATCHEWAN:	
Barlow Bros. Ltd.	Box 268, Lloydminster
Clark Drilling Co.	Box 425, Watrous
Creehman, R. E., & Son	1113 Ave. B. North, Saskatoon
Northern Development Co. Ltd.	Lloydminster
Shaw Petroleum Ltd.	Lloydminster
Withers, C. H., Drilling Co. Ltd.	Lloydminster

Fuel Well Drilling Contractors - Concluded

Name of Firm	Head Office Address
ALBERTA:	
Associated Noble Corp.	405 A Eighth Ave. W., Calgary
B & W Drilling Contractors.....	Box 359, Vegreville
Bush, O. D.	231 8th Avenue W., Calgary
Canada West Drilling Co. Ltd.	314 Alberta Corner, Calgary
Canokla Drillers Ltd.	1010 Security Building, Windsor, Ontario
Can-Tex Drilling Co. Ltd.	609 Lancaster Building, Calgary
Commonwealth Drilling Co. Ltd.	4 Clarence Block, Calgary
Cuibert & Kinniburgh.....	Black Diamond
Drilling Contractors Ltd.	902 Lancaster Building, Calgary
Confirmation Drilling.....	Millarville
General Petroleum Ltd.	509 8th Ave. West, Calgary
Gervais, E.	403 2nd Ave. N. E., Calgary
Hanson, H. E.	502 Lancaster Building, Calgary
Kortmeyer, F.	Black Diamond
Machinery Depot Ltd.	1029 10th Ave. West, Calgary
Medhurst, R. P., & Sons.....	Foremost
Northwest Seismic Surveys Ltd.	112 Thomson Building, Edmonton
National Petroleum Corp. Ltd.	401 Leeson-Lineham Building, Calgary
Parker Drilling Co. of Canada	418 National Bank Building, Tulsa, Oklahoma, U.S.A.
Regent Drilling Co. Ltd.	Vermilion
Roxana Oils Co. Ltd.	408 Lancaster Building, Calgary
Sterling Drilling Co.	412 Leeson-Lineham Building, Calgary
Union Drilling & Development Co.	403 Lancaster Building, Calgary
Valley Oil Operators Ltd.	301 Lancaster Building, Calgary
Young Drilling Co. Ltd.	303 Toronto General Trusts Building, Calgary

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